

Rev. 12-01

- ☐ Catalog number – **A-2360-6** flanged ends
- ☐ Sizes – 2", 2-1/2", 3", 4", 6", 8", 10", 12"
- ☐ Meets or exceeds all applicable requirements of ANSI/AWWA C509 Standard and is certified to ANSI/NSF 61\*
- ☐ Flanged end dimensions and drilling comply with ANSI B16.1, class 125
- ☐ Iron body with nominal 10 mils MUELLER® Pro-Gard™ Fusion
- ☐ Epoxy Coated interior and exterior surfaces
- ☐ Epoxy coating meets or exceeds all applicable requirements of ANSI/AWWA C550 Standard and is certified to ANSI/NSF 61
- ☐ Iron wedge, symmetrical & fully encapsulated with molded rubber; no exposed iron
- ☐ Non-rising stem (NRS)
- ☐ Triple O-ring seal stuffing box (2 upper & 1 lower O-rings)
- ☐ Handwheel (2" square wrench nut optional)—open left or open right
- ☐ 2"-12" sizes—250 psig (1723 kPa) maximum working pressure, 500 psig (3447 kPa) static test pressure
- ☐ UL Listed, FM Approved: 200 psig (1379 kPa) – 2-1/2"-12" sizes

\* Approved for backflow prevention devices by USC (for 2-1/2" - 10" sizes)

**A-2360-6****Options**

See pages 10.34 and 10.35 for more information on Resilient Wedge Gate Valve options

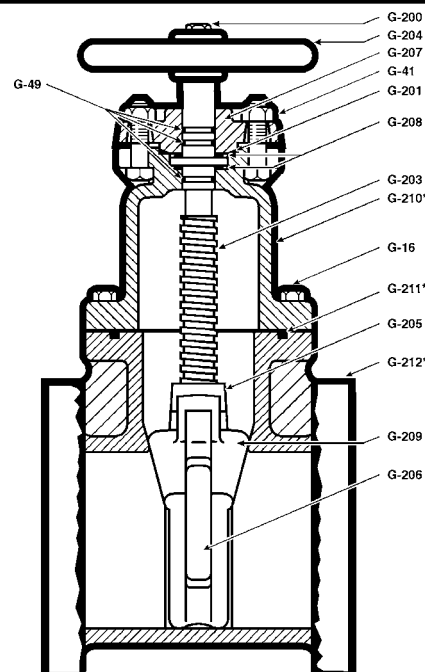
- ☐ Position indicators
- ☐ Stainless steel fasteners: Type 304, Type 316
- ☐ PN 10/16 Drilling
- ☐ ASTM B98-C66100/H04 stem
- ☐ 2" square wrench nut

**Resilient wedge gate valve parts**

Catalog Part No.	Description	Material	Material standard
G-16	Bonnet Bolts & Nuts	Carbon Steel	ASTM A307 Grade B, Zinc Plated
G-41	Stuffing Box Bolts & Nuts	Carbon Steel	ASTM A307 Grade B, Zinc Plated
G-49	Stem O-rings (3)	Rubber	ASTM D2000
G-200	Wrench Nut Cap Screw	Carbon Steel	ASTM A307 Grade B, Zinc Plated
G-201	Stuffing Box Seal	Rubber	ASTM D2000
G-202	Wrench Nut	Cast Iron	ASTM A126 CL.B
G-203	Stem	Bronze	ASTM B138
G-204	Hand Wheel (not shown)	Cast Iron	ASTM A126 CL.B
G-205	Stem Nut	Bronze	ASTM B62
G-206	Guide Cap Bearings	Celcon	
G-207	Stuffing Box	Cast iron	ASTM A126 CL.B
G-208	Anti-friction Washers (2)	Celcon	
G-209	Wedge, Rubber Encapsulated	Cast Iron*	ASTM A126 CL.B
G-210**	Bonnet	Cast Iron	ASTM A126 CL.B
G-211**	Bonnet O-ring	Rubber	ASTM D2000
G-212**	Body	Cast Iron	ASTM A126 CL.B

\* Fully encapsulated in molded rubber with no iron exposed

\*\* Previous to 1999 these parts on 4"-12" valves were designed with a gasket instead of an O-ring and with additional bolts (2"-3" sizes retain gasket design affecting these parts). Confirm the type of seal when ordering a replacement gasket or O-ring.

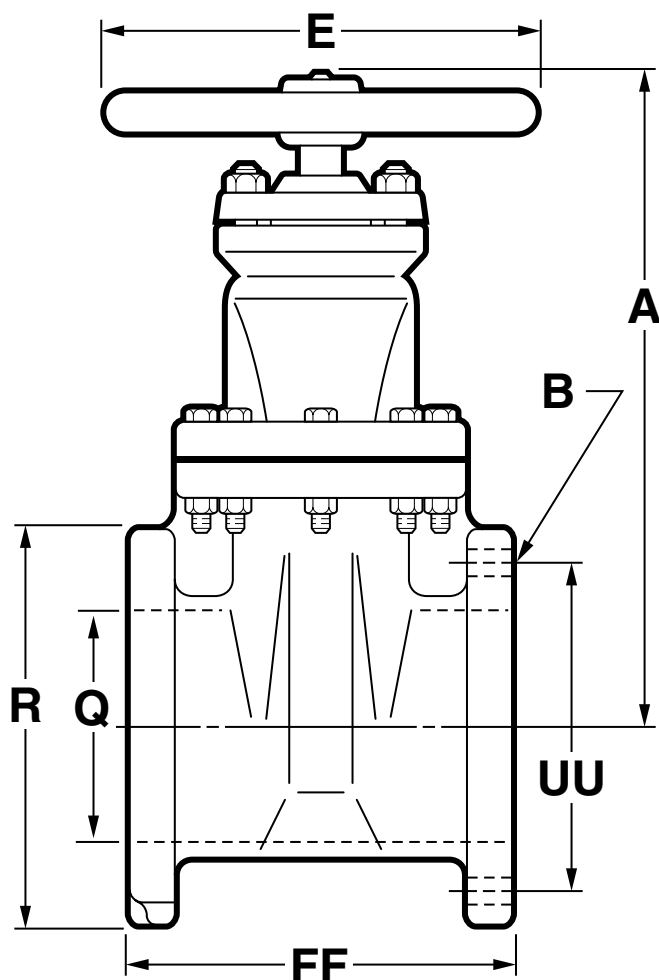


# 2"-12" MUELLER® A-2360 RESILIENT WEDGE GATE VALVE - FL. x FL.

**Mueller Co.**

**10.5**

Rev. 12-01



## Dimensions

Dimension*	Nominal size							
	2"	2-1/2"	3	4"	6"	8"	10"	12"
A	9.88	12.38	12.38	14.19	18.00	21.50	25.50	28.62
E	6.00	6.00	8.00	11.00	13.00	14.00	16.00	16.00
R	6.00	7.00	7.50	9.00	11.00	13.50	16.00	19.00
FF	7.00	7.50	8.00	9.00	10.50	11.50	13.00	14.00
Q (bore)	2.30	2.80	3.30	4.30	6.30	8.30	10.30	12.30
UU (bolt circle diameter)	4.75	5.50	6.00	7.50	9.50	11.75	14.25	17.00
B (number and size of holes)	4-3/4"	4--3/4"	4--3/4"	8--3/4"	8--7/8"	8--7/8"	12--1"	12--1"
Turns to open	8	11	11	14	20.5	26.5	33	38.5
Weight*	37	71	73	96	154	250	400	500

\*All dimensions are in inches. All weights are in pounds and are approximate.

## 14"-36" MUELLER® DOUBLE-DISC NRS GATE VALVES - FL. x FL.

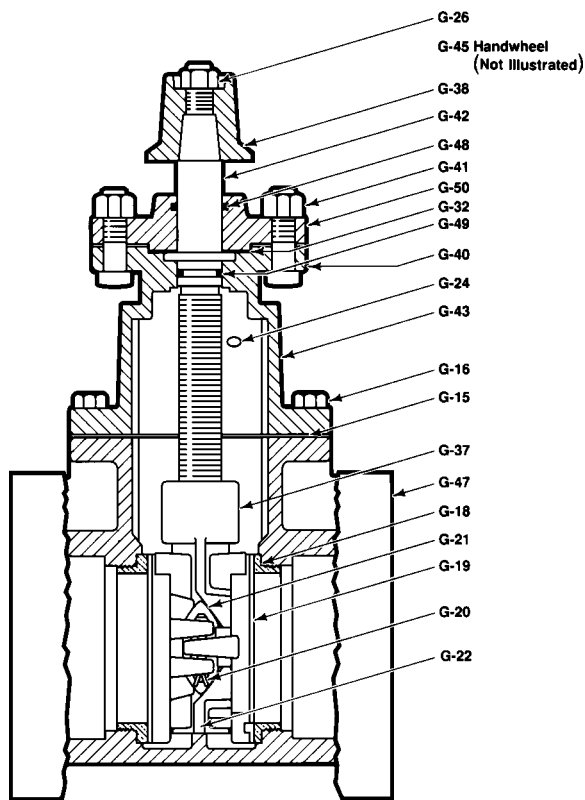
- ☐ Catalog number—  
**A-2380-6** flanged ends
- ☐ Sizes - 14", 16", 18", 20", 24", 30", 36"
- ☐ Meets or exceeds all applicable requirements of ANSI/AWWA C500 Standard
- ☐ Flange ends comply with ANSI B16.1, Class 125
- ☐ Iron body - bronze mounted
- ☐ Double disc parallel seat with four point wedging mechanism
- ☐ Non-rising stem (NRS)
- ☐ O-ring sealed stuffing box
- ☐ With handwheel (2" square wrench nut optional)
- ☐ 14" thru 36" sizes—150 psig (1034 kPa) maximum working pressure,  
300 psig (2068 kPa) test pressure



**A-2380-6**

### Double-disc gate valve parts

Catalog Part No.	Description	Material	Material standard
G-15	Bonnet gasket	Composition	ASTM D1170
G-16	Bonnet bolts & nuts	Steel	ANSI B18.2 plated
G-18	Seat ring	Bronze	ASTM B62
G-19	Disc and disc ring	Cast iron **	ASTM A126 CL.B
G-20	Disc pin	Bronze	ASTM B21
G-21	Side spreader	Bronze	ASTM B62
G-22	Bottom wedge	Cast iron	ASTM A126 CL.B
G-24	Test plug	Iron	
G-26	Nut for wrench nut	Steel	ANSI B18.2 plated
G-32	Stuffing box gasket	Fiber	
G-37	Top wedge nut	Cast iron **	ASTM A126 CL.B
G-38	Wrench nut	Cast iron	ASTM A126 CL.B
G-41	Stuffing box bolt & nut	Steel	ANSI B18.2 plated
G-42	Stem	Bronze	ASTM B138
G-43	Bonnet	Cast iron	ASTM A126 CL.B
G-45	Hand wheel	Cast iron	ASTM A126 CL.B
G-47	Body	Cast iron	ASTM A126 CL.B
G-48	Stuffing box O-ring	Rubber	ASTM D2000
G-49	Stem O-ring	Rubber	ASTM D2000
G-50	Stuffing Box	Cast Iron	ASTM A126 CL.B



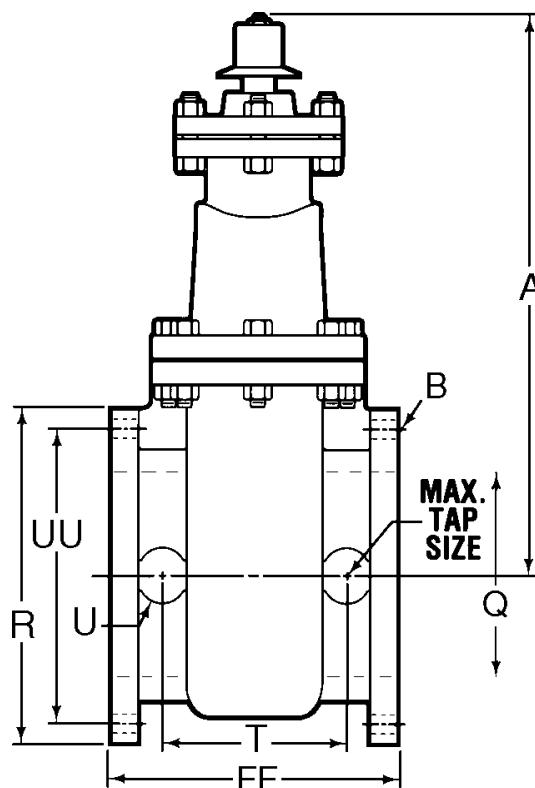
\*\* Cast iron discs with rolled-in bronze facings; cast iron top wedge nut with integrally cast bronze bushing.

# MUELLER® DOUBLE-DISC NRS GATE VALVE - FL. x FL.

**Mueller Co.**

**10.29**

Rev. 12-01



Dimension*	Nominal Size						
	14"	16"	18"	20"	24"	30"	36"
A	34.12	39.00	43.00	47.50	55.75	66.50	**
Q (bore)	14.00	16.00	18.00	20.00	24.00	30.00	36.00
FF	15.00	20.25	22.00	22.25	25.50	28.75	32.00
R	21.00	23.50	25.00	27.50	32.00	38.75	46.00
T	9.00	N/A	N/A	N/A	N/A	N/A	N/A
U	3.00	N/A	N/A	N/A	N/A	N/A	N/A
UU (bolt circle diameter)	18.75	21.25	22.75	25.00	29.50	36.00	42.75
B (number and size of holes)	12--1-1/8	16--1-1/8	16--1-1/4	20--1-1/4	20--1-3/8	28--1-3/8	32--1-5/8
Max. tap size	2	N/A	N/A	N/A	N/A	N/A	N/A
Turns to open†	46	53	59	65	77	65	78

\*All dimensions are in inches. All weights are in pounds and are approximate.

\*\*36" valves only sold with gear operators, dimension depends on style of operator selected. Contact Customer Service for Dimension.

†Double turns to open for 14" MUELLER geared valves and quadruple turns to open for 16"-36" MUELLER geared valves.

## Options

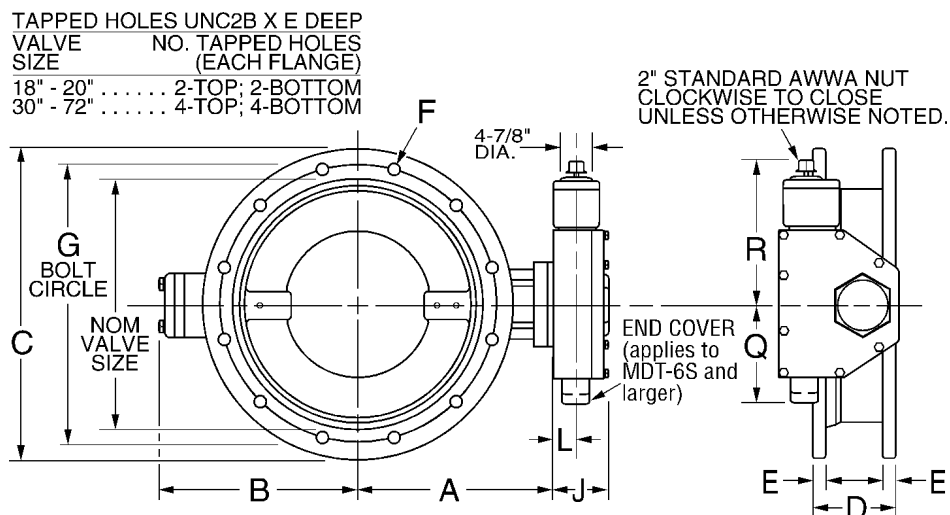
See pages 10.34 and 10.35 for more information on Gate Valve options.

- ☐ Bevel gearing with grease case
- ☐ Spur gearing with grease case
- ☐ Tracks, rollers, scrapers
- ☐ Position indicators
- ☐ ASTM B98-C66100/H04 stem and disc pins
- ☐ NRS by-pass valve
- ☐ 2" Square wrench nut
- ☐ MUELLER HP® Epoxy Coating
- ☐ Stainless steel fasteners

# MUELLER® LINESEAL XP® BUTTERFLY VALVES 4"-48"\* 250PSI - FLANGE ENDS

Rev. 3-97

## Dimensions - for Mueller Line Seal III Butterfly Valves - Flange Ends, 4"-48"\* Sizes.



## Dimensions

Dimension**	Nominal size													
	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"
A	5-1/2	7-1/4	8-1/2	9-3/4	11-1/2	12-3/4	14	15-1/4	17	19-3/4	25-5/8	28-1/8	32-1/8	36-1/4
B	3-1/2	8-3/8	9-5/8	11	12-5/8	13-7/8	15-1/8	16-3/8	17-5/8	20-1/4	26	31-1/8	35-1/8	39-5/8
C	10	12-1/2	15	17-1/2	20-1/2	23	25-1/2	28	30-1/2	36	43	50	57	65
D	5	6	8	8	8	12	12	12	12	12	12	15	15	15
E	1-1/4	1-7/16	1-5/8	1-7/8	2	2-1/8	2-1/4	2-3/8	2-1/2	2-3/4	3	3-3/8	3-11/16	4
F (number and size of holes)	8 — 3/4	12 — 3/4	12 — 7/8	16 — 1	16 — 1-1/8	20 — 11/8	20 — 1-1/4	24 — 1-1/4	24 — 1-1/4	24 — 1-1/2	28 — 1-3/4	32 — 2	36 — 2	40 — 2
G	7-7/8	10-5/8	13	15-1/4	17-3/4	20-1/4	22-1/2	24-3/4	27	32	39-1/4	46	52-3/4	60-3/4
J	4-3/8	4-3/8	4-3/8	4-3/8	4-3/8	5-3/16	5-3/16 (MDT3) 5-15/16 (MDT4)	5-15/16	5-15/16 (MDT4) 7-7/16 (MDT5)	7-7/16	9-1/16 (MDT5) 10-1/16 (MDT5S)	10-1/16 (MDT5S) 10-7/16 (MDT6) 15-7/8 (MDT7)	10-1/16 (MDT5S) 10-11/16 (MDT6S) 15-7/8 (MDT7)	11-11/16 (MDT6S) 15-7/8 (MDT7)
L	2	2	2	2	2	2-7/16	2-7/16 (MDT3) 2-13/16 (MDT4)	2-13/16	2-13/16 (MDT4) 3-7/16 (MDT5)	3-7/16	5-1/16 (MDT5) 5-9/16 (MDT5S)	5-9/16 (MDT5S) 6-11/16 (MDT6S) 8-3/4 (MDT7)	5-9/16 (MDT5S) 6-11/16 (MDT6S) 8-3/4 (MDT7)	6-11/16 (MDT6S) 8-3/4 (MDT7)
Q	4-1/4	4-1/4	4-1/4	4-1/4	4-1/4	5-3/8	5-3/8 (MDT3) 6-3/4 (MDT4)	6-3/4	6-3/4 (MDT4S) 10 (MDT5)	10	10 (MDT5) 15-15/16 (MDT5S)	15-15/16 (MDT5S) 18-5/8 (MDT6S) 23-7/16 (MDT7)	15-15/16 (MDT5S) 18-5/8 (MDT6S) 23-7/16 (MDT7)	18-5/8 (MDT6S) 23-7/16 (MDT7)
R	7-5/8	7-5/8	7-5/8	7-5/8	7-5/8	9-1/4	9-1/4 (MDT3) 10-1/2 (MDT4)	10-1/2	10-1/2 (MDT4) 17 (MDT5)	17	17 (MDT5) 19-11/16 (MDT5S)	19-11/16 (MDT5S) 26-1/2 (MDT6) 30-3/16 (MDT7)	19-11/16 (MDT5S) 26-1/2 (MDT6) 30-3/16 (MDT7)	26-1/2 (MDT6) 30-3/16 (MDT7)
Turns to open	32	32	32	32	32	30	30 (MDT3) 40 (MDT4)	40	40 (MDT4S) 136 (MDT5)	44	44 (MDT5) 136 (MDT5S)	136 (MDT5S) 215 (MDT6) 492 (MDT7)	136 (MDT5S) 215 (MDT6) 492 (MDT7)	215 (MDT6) 492 (MDT7)
Weight*	60	81	118	201	270	377	456	588	678	1029	1874	2735	3690	4340

\* Details on other sizes available upon request.

\*\* All dimensions are in inches. All weights are in pounds and are approximate.

# M&H AWWA DOUBLE DISC PARALLEL SEAT IBBM GATE VALVES

M&H VALVE COMPANY

**M&H AWWA DOUBLE DISC PARALLEL SEAT  
IBBM Gate Valves Meet or Exceed  
The Requirements of AWWA C500**

SIZE RANGE	2" - 48"
------------	----------

	Water Working Pressure psi	Hydrostatic Test psi
2" - 12"	200	400
14" - 48"	150	300

Available in either NRS, OS&Y or Sliding Stem

Available End Connections & Size Range		Figure # (NRS)	Figure # (OS&Y)
Flange	2" - 48"	67-02	68-02
M.J.	2" - 36"	67-01	-
Push-on Ends for C.I. Pipe	4" - 12"	67-22	-
Flg. & M.J.	4" - 36"	67-13	-
Push-on Ends for PVC	2" - 10"	67-03	-

## Accessories

Floorstands (NRS & R.S.)	Indicator Posts
Limit Switches	By-Pass Valves
Open Gearing	Enclosed Gearing (Grease Case)
Needle & Slot (Navy) Indicators	Barrel Indicators
Electric Motors	Tracks, Rollers & Scrapers - for Valves
2" Sq. Operating Nuts	14" or larger
Chainwheels	Handwheels
"T" Handles	Extension Stems
Stem Guides	Floor Boxes

Center slides for valves installed horizontal position in vertical line  
Installed horizontal position in horizontal line

\*Note: Call Factory for special applications

**M&H AWWA DOUBLE DISC  
GATE VALVES  
IRON BODY, BRONZE MOUNTED, PARALLEL SEAT**

**M&H VALVE COMPANY**

**DESCRIPTION AND ADVANTAGES**

M&H AWWA Gate Valves are designed primarily for flow control of water in underground pipe lines. They equal or exceed the requirements established by standards of the American Water Works Association and conform to Federal Specifications WW-V-58B, Type II, Class I.

M&H AWWA Gate Valves are specifically designed for heavy pressure service. Neck, Flanges, and bell are made extra heavy to withstand pipe strain and possible shifting. Body, cover, gates and stem are built for extra strength, with clean and simple internal construction, to assure long service and low maintenance.

All working parts are standardized and interchangeable.

**OPERATION OF THE VALVE**

Turning the stem releases the wedging pressure on the gates allowing them to move away from their seats before starting upward travel. Further turning of the stem raises the gates into the full opened position.

When closing the valve, the gates move freely downward without friction, to a position opposite their seats.

As the gates approach the bottom of the valve, the iron hooks come into contact with stops which prevent further downward movement of the hooks. The bronze wedges riding on these hooks spread the gates apart and force them against their seats.

**CONSTRUCTION**

**Body:** Cast iron, bronze mounted. Sturdy proportions provide protection against damage.

**Stem:** Manganese bronze of high tensile and torsional strength, with accurate, perfectly machined threads. Ample diameters assure smooth valve movements.

**Stem Nut:** Solid bronze. Independent of hooks, gates, and wedges. Stem or stem nut will not bind or spring out of line, as can happen when stem nut is attached to wedges.

**Wedges:** Independent, solid bronze, 2" - 3" valves have integral hook and wedge. 4" - 8" have independent solid bronze wedges placed loosely in iron hooks, and are free to adjust to varying positions of the gates. In 10" and larger valves, each wedge has one long and one short surface. The bottom of each wedge forms a rocker bearing on the iron hooks, letting wedges adjust to varying positions of the gates in closing. The long side is used in closing the valve and the short side in opening it.

**Low Torque Thrust Bearing:** Valves 4" - 12" are fitted below the stem collar with an exclusive Low Torque Thrust Bearing which provides high load capacity and low friction. This bearing reduces operating torque up to 50% yet seals perfectly for repacking under pressure.

**Gates and Gate Rings:** Gates 3" and smaller are bronze. Gates 4" and larger are high strength cast iron with bronze gate rings rolled into machined and dovetailed grooves under pressure to make gate and ring one inseparable unit. After fitting, gate rings are accurately machined.

**Case Rings:** Bronze case rings are screwed into place and machined. They can be removed and replaced if necessary.

**Packing:** O-Ring packing is standard on all non-rising stem gate valves. Rising stem and geared valves are furnished with conventional packing.

**Operating Nut and Handwheel:** All valves except flanged valves and outside screw and yoke valves are supplied with 2" square operating nuts of high strength cast iron unless otherwise specified. Flanged valves and outside screw and yoke valves are supplied with handwheels of high strength cast iron unless otherwise specified. Direction of opening is indicated by arrow cast on operating nut skirt or on the rim of the handwheel.

**Yoke:** Yokes for outside screw and yoke valves are of rugged cast iron. Careful machining assures accurate stem alignment.

**Accessories:** Valves may be fitted with any of a large number of accessories: cylinders, electric motor operators, gearing, by-passes, etc.

**Rollers, Tracks and Scrapers:** Recommended for 14" and larger diameter valves to carry weight of the gates for valves installed in a horizontal line in horizontal position.

**Slides:** Recommended for 14" and larger valves installed horizontally in a vertical line.

**NOTE:** All valves open to the left (counter clockwise) unless otherwise specified.

# M&H AWWA DOUBLE DISC PARALLEL SEAT IBBM GATE VALVES

M&H VALVE COMPANY

**M&H AWWA DOUBLE DISC PARALLEL SEAT  
IBBM Gate Valves Meet or Exceed  
The Requirements of AWWA C500**

SIZE RANGE	2" - 48"
------------	----------

	Water Working Pressure psi	Hydrostatic Test psi
2" - 12"	200	400
14" - 48"	150	300

Available in either NRS, OS&Y or Sliding Stem

Available End Connections & Size Range		Figure # (NRS)	Figure # (OS&Y)
Flange	2" - 48"	67-02	68-02
M.J.	2" - 36"	67-01	-
Push-on Ends for C.I. Pipe	4" - 12"	67-22	-
Flg. & M.J.	4" - 36"	67-13	-
Push-on Ends for PVC	2" - 10"	67-03	-

## Accessories

Floorstands (NRS & R.S.)	Indicator Posts
Limit Switches	By-Pass Valves
Open Gearing	Enclosed Gearing (Grease Case)
Needle & Slot (Navy) Indicators	Barrel Indicators
Electric Motors	Tracks, Rollers & Scrapers - for Valves
2" Sq. Operating Nuts	14" or larger
Chainwheels	Handwheels
"T" Handles	Extension Stems
Stem Guides	Floor Boxes

Center slides for valves installed horizontal position in vertical line  
Installed horizontal position in horizontal line

\*Note: Call Factory for special applications

## DESCRIPTION AND ADVANTAGES

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M&H AWWA Gate Valves are specifically designed for heavy pressure service. Neck, Flanges, and bell are made extra heavy to withstand pipe strain and possible shifting. Body, cover, gates and stem are built for extra strength, with clean and simple internal construction, to assure long service and low maintenance.

All working parts are standardized and interchangeable.

## OPERATION OF THE VALVE

Turning the stem releases the wedging pressure on the gates allowing them to move away from their seats before starting upward travel. Further turning of the stem raises the gates into the full opened position.

When closing the valve, the gates move freely downward without friction, to a position opposite their seats.

As the gates approach the bottom of the valve, the iron hooks come into contact with stops which prevent further downward movement of the hooks. The bronze wedges riding on these hooks spread the gates apart and force them against their seats.

## CONSTRUCTION

**Body:** Cast iron, bronze mounted. Sturdy proportions provide protection against damage.

**Stem:** Manganese bronze of high tensile and torsional strength, with accurate, perfectly machined threads. Ample diameters assure smooth valve movements.

**Stem Nut:** Solid bronze. Independent of hooks, gates, and wedges. Stem or stem nut will not bind or spring out of line, as can happen when stem nut is attached to wedges.

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**Gates and Gate Rings:** Gates 3" and smaller are bronze. Gates 4" and larger are high strength cast iron with bronze gate rings rolled into machined and dovetailed grooves under pressure to make gate and ring one inseparable unit. After fitting, gate rings are accurately machined.

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**Yoke:** Yokes for outside screw and yoke valves are of rugged cast iron. Careful machining assures accurate stem alignment.

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**Slides:** Recommended for 14" and larger valves installed horizontally in a vertical line.

**NOTE:** All valves open to the left (counter clockwise) unless otherwise specified.

# M&H AWWA DOUBLE DISC GATE VALVES

IRON BODY, BRONZE MOUNTED, PARALLEL SEAT

M&H VALVE COMPANY

**CLOW AWWA Resilient Wedge Gate Valves**  
**Meet or Exceed the Requirements of**  
**AWWA Standard C509**

Size Range	Water Working Pressure psi	Bubble Tight Test psi	Hydrostatic Shell Test psi
AWWA 2"-12"	250	250	500
ULFM 4"-12"	200	200	400

**Available in either non-rising stem, outside screw & yoke.**

**Available End Connections & Size Range**

**Figure No.**

FLG End (NRS)	2"-12"	F-6102
M.J.	2"-12" (except 2 1/2")	F-6100
FLG & M.J.	3"-12"	F-6106
Push-on for PVC (SDR)	2"-8"	F-6110
FLG End (OS & Y)	2 1/2"-12"	F-6136
M.J. for Tapping	4"-12"	F-6114
Tyton for D.I. & C900 PVC	4"-12"	F-6112
M.J. Cutting-in	4"-12"	F-6111
Push-on for D.I. X FLG	4"-12"	F-6113
Threaded	2"-3"	F-6103
Push-on for C.I. for Tapping	4"-8"	F-6115

**Accessories (Illustrated in the Gate Valve Section)**

Indicator Posts	2" Sq. Operating Nuts
"T" Handles	Handwheels
Stem Guides	Extension Stems
Electric Motor Actuators	Floor Boxes
	Chain Wheels

Floorstands (non-rising stem)

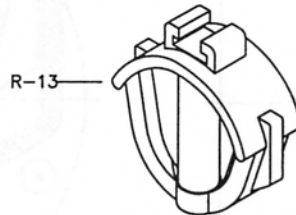
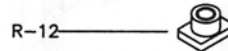
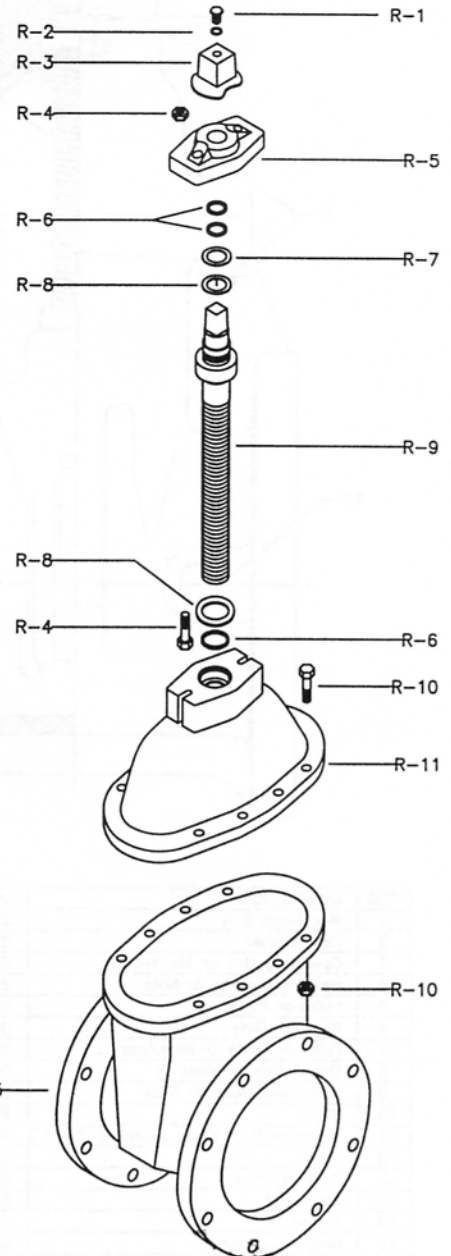
MODEL	2639	AWWA	C509	FULL BODY DUCTILE IRON
MODEL	2640	AWWA	C509	FULL BODY GRAY IRON

2"-12" RW VALVE FLANGED ENDS  
NRS ASSEMBLY - EXPLOSION

**CLOW VALVE COMPANY**

MODEL 2639 & 2640

ITEM NO.	QTY.	DESCRIPTION	2640	MATERIAL																																													
R-1	1	HOLD DOWN BOLT		ZINC CHROMATE PLATED STEEL																																													
R-2	1	HOLD DOWN BOLT WASHER		ZINC CHROMATE PLATED STEEL																																													
R-3	1	SQ. OPERATING NUT OR HANDWHEEL (NOT SHOWN)		GRAY IRON																																													
R-4	2	FOLLOWER PLATE BOLT& NUT		ZINC CHROMATE PLATED STEEL																																													
R-5	1	FOLLOWER PLATE		GRAY IRON																																													
R-6	3	STEM O-RING		NBR																																													
R-7	1	FOLLOWER PLATE O-RING		NBR </tr <tr> <td>R-8</td><td>1</td><td>THRUST WASHER (SIZES 2"-2.5")</td><td></td><td>DELTRIN</td></tr> <tr> <td>R-9</td><td>1</td><td>STEM</td><td></td><td>BRONZE</td></tr> <tr> <td>R-10</td><td>4</td><td>COVER BOLTS&amp;NUTS (SIZES 2" THRU 6")</td><td></td><td>ZINC CHROMATE PLATED STEEL</td></tr> <tr> <td></td><td>8</td><td>COVER BOLTS&amp;NUTS (SIZES 8" THRU 12")</td><td></td><td>ZINC CHROMATE PLATED STEEL</td></tr> <tr> <td>R-11</td><td>1</td><td>COVER</td><td></td><td>GRAY IRON</td></tr> <tr> <td>R-12</td><td>1</td><td>STEM NUT</td><td></td><td>BRONZE</td></tr> <tr> <td>R-13</td><td>1</td><td>WEDGE</td><td></td><td>GRAY IRON &amp; SBR</td></tr> <tr> <td>R-14</td><td>1</td><td>COVER O-RING</td><td></td><td>NBR</td></tr> <tr> <td>R-15</td><td>1</td><td>BODY</td><td></td><td>GRAY IRON</td></tr>	R-8	1	THRUST WASHER (SIZES 2"-2.5")		DELTRIN	R-9	1	STEM		BRONZE	R-10	4	COVER BOLTS&NUTS (SIZES 2" THRU 6")		ZINC CHROMATE PLATED STEEL		8	COVER BOLTS&NUTS (SIZES 8" THRU 12")		ZINC CHROMATE PLATED STEEL	R-11	1	COVER		GRAY IRON	R-12	1	STEM NUT		BRONZE	R-13	1	WEDGE		GRAY IRON & SBR	R-14	1	COVER O-RING		NBR	R-15	1	BODY		GRAY IRON
R-8	1	THRUST WASHER (SIZES 2"-2.5")		DELTRIN																																													
R-9	1	STEM		BRONZE																																													
R-10	4	COVER BOLTS&NUTS (SIZES 2" THRU 6")		ZINC CHROMATE PLATED STEEL																																													
	8	COVER BOLTS&NUTS (SIZES 8" THRU 12")		ZINC CHROMATE PLATED STEEL																																													
R-11	1	COVER		GRAY IRON																																													
R-12	1	STEM NUT		BRONZE																																													
R-13	1	WEDGE		GRAY IRON & SBR																																													
R-14	1	COVER O-RING		NBR																																													
R-15	1	BODY		GRAY IRON																																													



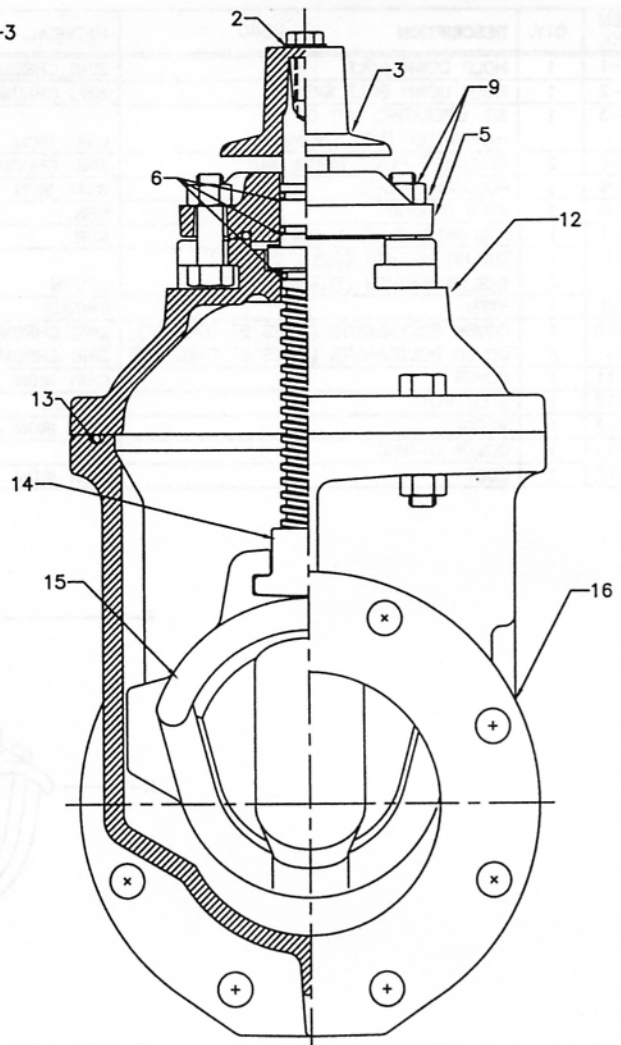
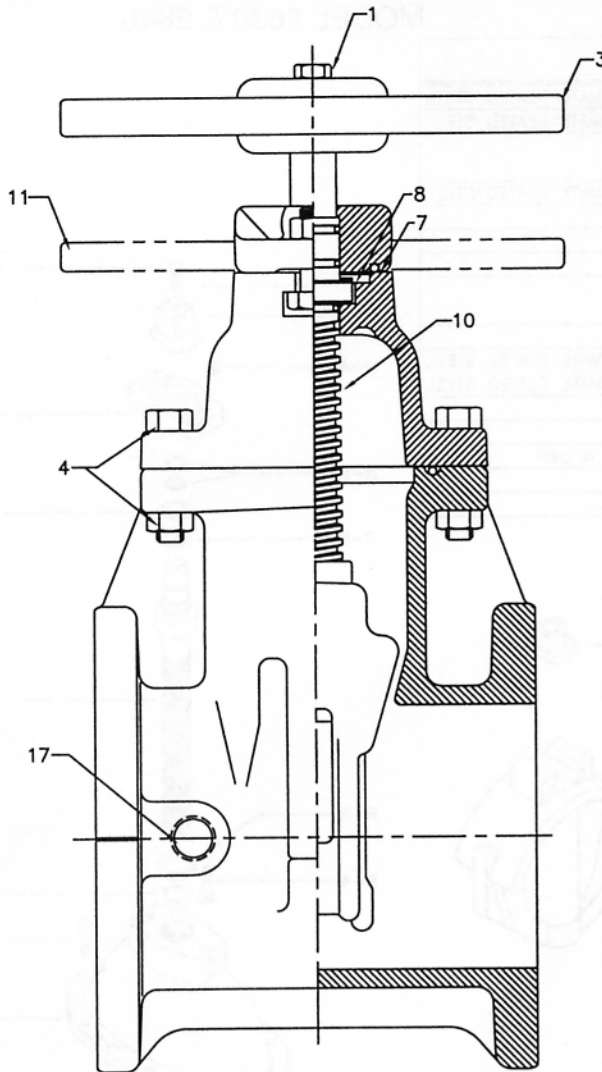
ITEM NO.	QTY.	DESCRIPTION	2639	MATERIAL
R-1	1	HOLD DOWN BOLT		ZINC CHROMATE PLATED STEEL
R-2	1	HOLD DOWN BOLT WASHER		ZINC CHROMATE PLATED STEEL
R-3	1	SQ. OPERATING NUT OR HANDWHEEL (NOT SHOWN)		GRAY IRON
R-4	2	FOLLOWER PLATE BOLT& NUT		ZINC CHROMATE PLATED STEEL
R-5	1	FOLLOWER PLATE		DUCTILE IRON
R-6	3	STEM O-RING		NBR
R-7	1	FOLLOWER PLATE O-RING		NBR
R-8	1	THRUST WASHER (SIZES 2"-2.5")		DELTRIN
	2	THRUST WASHER (SIZES 3-12")		DELTRIN
R-9	1	STEM		BRONZE
R-10	4	COVER BOLTS&NUTS (SIZES 2" THRU 6")		ZINC CHROMATE PLATED STEEL
	8	COVER BOLTS&NUTS (SIZES 8" THRU 12")		ZINC CHROMATE PLATED STEEL
R-11	1	COVER		DUCTILE IRON
R-12	1	STEM NUT		BRONZE
R-13	1	WEDGE		GRAY IRON & SBR
R-14	1	COVER O-RING		NBR
R-15	1	BODY		DUCTILE IRON

Complies with applicable  
requirements of AWWA C509

2"-12" R/W VALVE  
N.R.S. ASSEMBLY MATERIAL LIST

**CLOW VALVE COMPANY**

MODEL 2639 & 2640



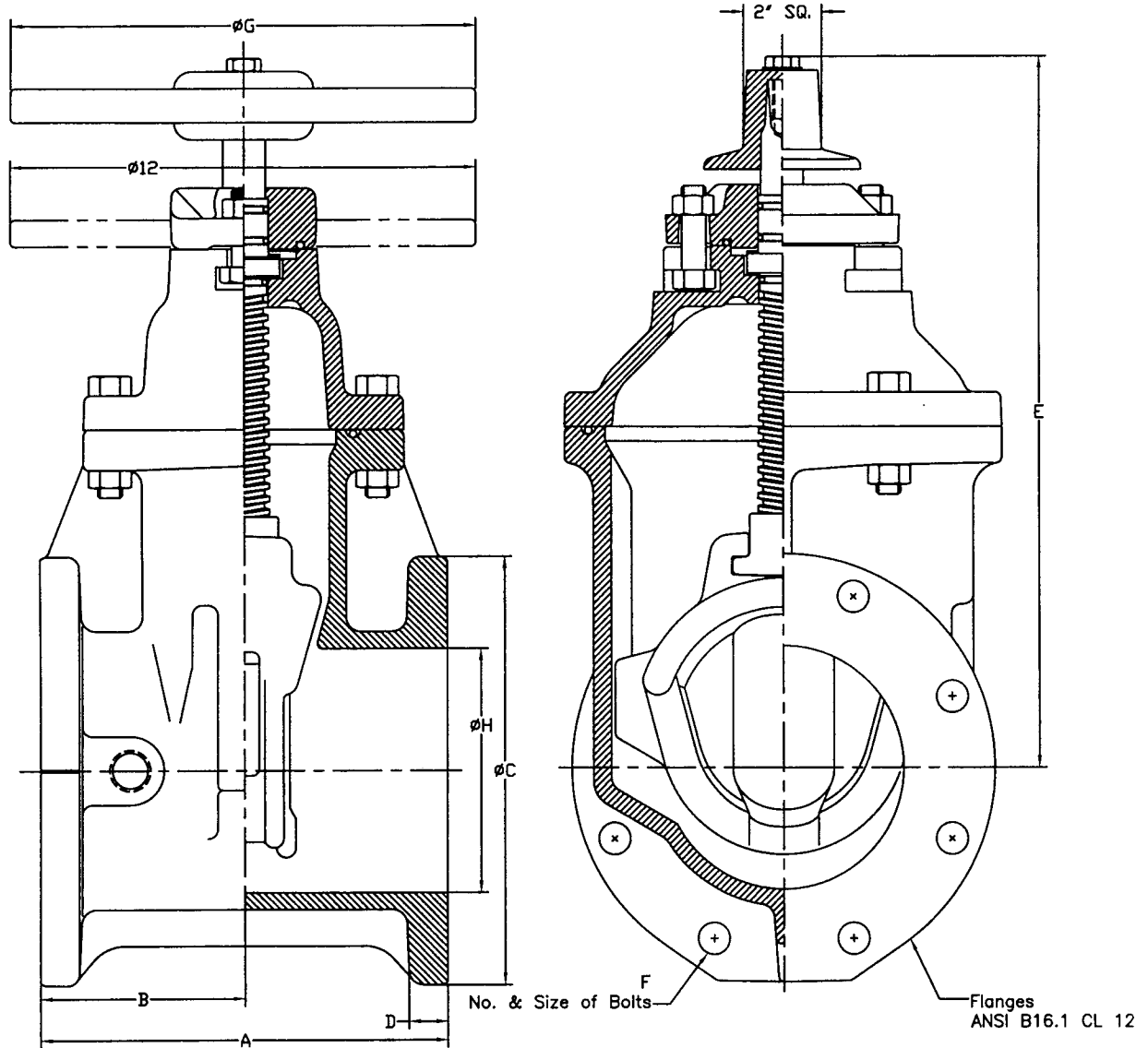
ITEM	DESCRIPTION	MATERIAL 2640	ASTM SPEC.	MATERIAL 2639	ASTM SPEC.
1	Hex Head Bolt	Zinc Chromate Plated Steel	ASTM A307 Gr B	Zinc Chromate Plated Steel	ASTM A307 Gr B
2	Flat Washer	Zinc Chromate Plated Steel	ASTM A307 Gr B	Zinc Chromate Plated Steel	ASTM A307 Gr B
3	Operating Nut or Handwheel	Gray Iron	ASTM A126 CI B	Gray Iron	ASTM A126 CI B
4	Hex Head Bolts & Nuts	Zinc Chromate Plated Steel	ASTM A307 Gr B	Zinc Chromate Plated Steel	ASTM A307 Gr B
5	Follower Plate	Gray Iron	ASTM A126 CI B	Ductile Iron	ASTM A536 Gr 64-45-10
6	Stem O-Ring	Buna N	-----	Buna N	-----
7	Follower Plate O-Ring/gasket	Buna N	-----	Buna N	-----
8	Thrust Washer Bearing	Delrin	-----	Delrin	-----
9	Hex Head Bolts & Nuts	Zinc Chromate Plated Steel	ASTM A307 Gr B	Zinc Chromate Plated Steel	ASTM A307 Gr B
10	Stem	Bronze	ASTM B584 C86700	Bronze	ASTM B584 C86700
11	Indicator Post Plate (Optional 3-12")	Gray Iron	ASTM A126 CI B	Ductile Iron	ASTM A536 Gr 64-45-10
12	Cover	Gray Iron	ASTM A126 CI B	Ductile Iron	ASTM A536 Gr 64-45-10
13	Cover O-Ring	Buna N	-----	Buna N	-----
14	Stem Nut	Bronze	ASTM B584 C83600	Bronze	ASTM B584 C83600
15	Wedge	Gray Iron & SBR	ASTM A126 CI B	Gray Iron & SBR	ASTM A126 CI B
16	Body - all types	Gray Iron	ASTM A126 CI B	Ductile Iron	ASTM A536 Gr 64-45-10
17	Pipe Plug (Optional Some Styles)	Stainless Steel	-----	Stainless Steel	-----

2"-12" R/W VALVE FLANGED ENDS  
GENERAL DIMENSION

**CLOW VALVE COMPANY**

MODEL 2639 & 2640

F-6102



VALVE SIZE	A	B	C	D	E	F	G	H
2	7	3½	6	¾	10⅞	4-⅝	7¼	2
2½	7½	3¾	7	1⅛	11⅞	4-⅝	7¼	2½
3	8	4	7½	¾	12⅞	4-⅝	10	3
4	9	4½	9	1⅛	14¾	8-⅝	10	4¼
6	10½	5¼	11	1	19	8-¾	12	6¼
8	11½	5¾	13½	1⅞	22½	8-¾	14	8¼
10	13	6½	16	1⅞	26½	12-⅞	18	10¼
12	14	7	19	1¼	30	12-⅞	18	12¼

**CLOW AWWA Dbl. Disc Parallel Seat  
IBBM Gate Valves Meet or Exceed  
the requirements of AWWA C500**

Size Range	2"-48"	
	Water working Pressure psi	Hydrostatic Test psi
2"-12"	200	400
14"-48"	150	300

Available in either, NRS or OS&Y.

**Available End Connections & Size Range**

**Figure No.**

Flg. -NRS	2"-48"	F-5070
Flg. -OS&Y	12"-36"	F-5072
M.J.	2"-36"	F-5065
MJ Cutting End	4"-12"	F-5067
Tyton Ends for DI Pipe & C900 PVC	4"-12"	F-5080
Flg. & M.J.	4"-36"	F-5066
Flg. & Tyton for DI	4"-12"	F-5080
Push-on Ends for PVC	2"-10"	F-5085

**Accessories**

Floorstands (NRS & R.S.)  
Needle & Slot (Navy) Indicators  
Electric Motors  
2" Sq. Operating Nuts  
Chainwheels  
"T" Handles  
Stem Guides  
Indicator Posts

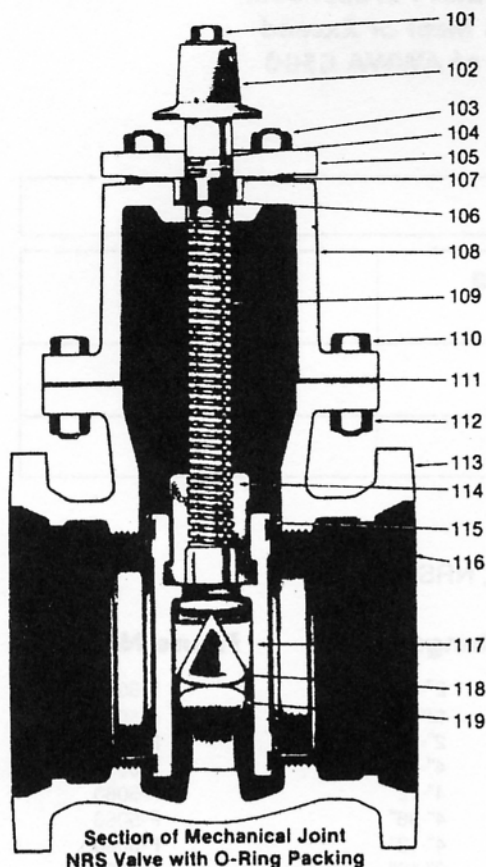
By-pass Valves  
Enclosed Gearing(Grease Case)  
Position Indicators  
Tracks, Rollers, & Scrapers for  
Valves 14" or larger Installed  
Horizontal Position in Horizontal Line  
Handwheels  
Extension Stems  
Floor Boxes

\* Note: Call Factory For Special Applications

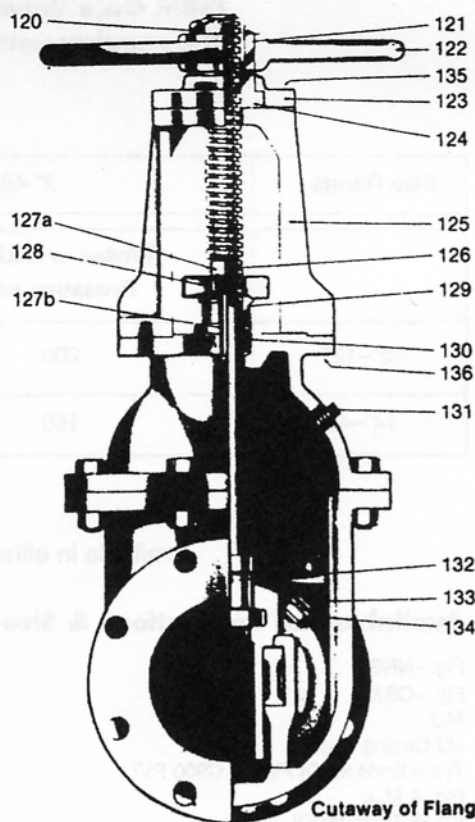
# AWWA DOUBLE DISC GATE VALVES PARTS LIST

**CLOW VALVE COMPANY**

## \*Recommended Spare Parts



Section of Mechanical Joint  
NRS Valve with O-Ring Packing



Cutaway of Flanged Valve  
with Outside Screw and Yoke

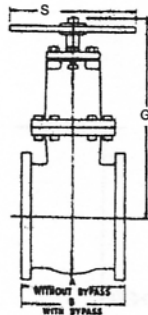
DET.	QTY.	DESCRIPTION	MATERIAL
101	1	CAP SCREW	STEEL
102	1	OPERATING NUT	CAST IRON
*103		O-RING PLATE BOLTS & NUTS	STEEL
*104	2	O-RINGS	RUBBER
105	1	O-RING PLATE	CAST IRON
106	1	LOW TORQUE BEARING	
*107	1	STUFFING BOX GASKET	
108	1	COVER	CAST IRON
*109	1	NON-RISING STEM	BRONZE
*110		NECK FLANGE BOLTS	STEEL—RUST-PROOFED
*111	1	NECK FLANGE GASKET	COMPOSITION
*112		NECK FLANGE BOLT NUTS	STEEL
113	1	BODY	CAST IRON
*114	1	GATE NUT	BRONZE
115	2	GATE RING	
116	2	CASE RING	BRONZE
*117	2	GATE	CAST IRON
*118	2	WEDGE	BRONZE
*119	2	HOOK	CAST IRON

DET.	QTY.	DESCRIPTION	MATERIAL
*120	1	HOLD DOWN NUT	BRONZE
121	1	HANDWHEEL KEY	STEEL
122	1	HANDWHEEL	CAST IRON
123	1	OS&Y RETAINER PLATE	CAST IRON
*124	1	OS&Y STEM NUT	BRONZE
125	1	OS&Y YOKE	CAST IRON
*126	1	RISING STEM	BRONZE
127A	2	FOLLOWER NUTS	BRONZE
127B	2	FOLLOWER STUDS	STEEL—RUST-PROOFED
128	1	FOLLOWER PLATE	CAST IRON
129	1	FOLLOWER GLAND	BRONZE
*130		PACKING	ACRYLIC GRAPHITE
131	1	TEST PLUG	TEFLON-COATED STEEL
*132	1	STEM NUT PIN	BRONZE
*133	4	PEGS	BRONZE
*134	2	STRAPS	*STAINLESS OR BRONZE
*135		OS&Y CAP SCREWS	STAINLESS 10" & 12" ONLY STEEL—RUST-PROOFED
136		OS&Y YOKE BOLTS & NUTS	STEEL—RUST-PROOFED

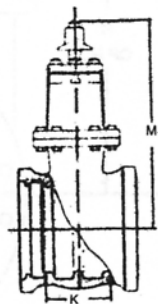
CLOW AWWA GATE VALVES  
UNDERGROUND AND PLANT  
PIPING SYSTEMS

CLOW VALVE COMPANY

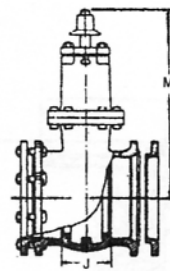
VALVE SIZE	A	B	G	J	K	M <sub>1</sub>	P	S	U	Y	Z	AA	BB	DD	GG	HH	LL	Turns to Open	Diam. of Stem
2	7	—	10 1/4	3 1/4	—	10 1/4	—	7 1/4	—	—	—	—	—	—	—	—	—	5	7/8
2 1/4	7 1/2	—	10 1/4	3 1/4	—	10 1/4	—	7 1/4	—	—	—	—	—	—	—	—	—	5	7/8
2 1/2	7 1/2	—	11 3/8	—	—	11 3/8	—	7 1/4	—	—	—	—	—	—	—	—	—	6	7/8
3	8	—	12 1/4	3 1/2	—	12 1/2	—	7 1/4	—	—	—	—	—	—	—	—	—	7	7/8
4	9	—	14	4 3/4	5 1/4	14	4 1/2	10	—	—	—	—	—	—	—	—	6 7/8	15	1 1/8
5	10	—	15 1/2	—	—	15 1/2	—	10	—	—	—	—	—	—	—	—	—	18	1 1/8
6	10 1/2	—	18	5 1/4	6 1/2	18	5 1/4	12	—	—	—	—	—	—	—	—	8	21	1 1/4
8	11 1/2	—	22	6 1/2	7	22	6 1/4	14	—	—	—	—	—	—	—	—	9	27	1 3/8
10	13	—	25 5/8	6 3/4	7 1/4	25 5/8	6 1/2	18	—	8	—	—	—	—	—	—	—	33	1 1/2
12	14	—	29 1/8	7	7 3/4	29 1/8	—	18	—	8	—	18	40 3/4	12	38 1/2	31 5/8	10 1/2	39	1 1/2
14	15 3/4	23	36 1/2	7 1/4	—	39 3/4	—	22	19 1/4	8	31 7/8	18	45	12	42 3/4	35 7/8	11 1/2	45	1 7/8
16	17	23	40 3/4	9 1/4	—	43 1/2	—	22	20 1/2	8	33 3/8	18	49	12	46 3/8	39 3/4	15 3/8	52	1 7/8
18	19	24	43 1/4	9 1/4	—	46	—	26	22 1/2	8	36 3/8	18	52 1/8	12	50	42 7/8	16 1/2	58	2 1/8
20	20	24	47 1/4	10	—	50	—	26	24	8	40 1/2	18	55 3/4	12	53 5/8	46 1/2	18 3/8	64	2 1/8
24	23	28 1/2	55	16	—	56 3/4	—	30	28	8	46	18	62 1/8	12	60	52 1/8	22	76	2 1/2
30	25	32 1/2	64 3/4	12 1/2	—	66 1/2	—	30	31 1/2	10	54 1/2	18	76 3/4	15 1/2	72 1/8	66	—	63	2 3/4
36	27	36	75 3/8	23 3/4	—	77 3/8	—	36	40	13 3/8	68 1/8	22	88 3/8	21 1/2	81 1/8	72 3/8	—	75	3
42	34	34	—	—	—	—	—	30	47	10	77 1/2	30	106 3/8	27	105 1/2	97	—	88	3 1/2
48	45 1/2	45 1/2	—	—	—	—	—	30	54 1/2	11 1/4	87 1/2	30	120 5/8	27	119	108	—	100	4



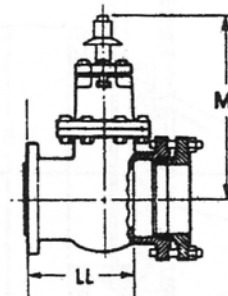
F-5070  
Flanged Ends



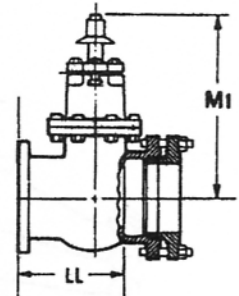
F-5080  
Tyton Ends  
For Ductile Iron Pipe



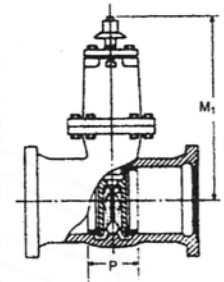
F-5065  
Mechanical Joint



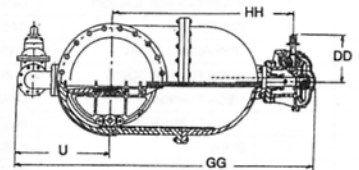
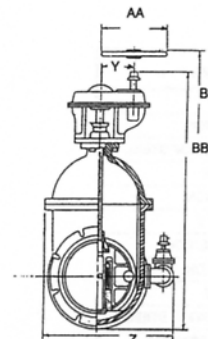
F-5093  
Mechanical Joint  
Tapping Valve



F-5066  
Flanged and  
Mechanical Joint Ends



F-5085  
Push-On Ends  
For PVC Pipe



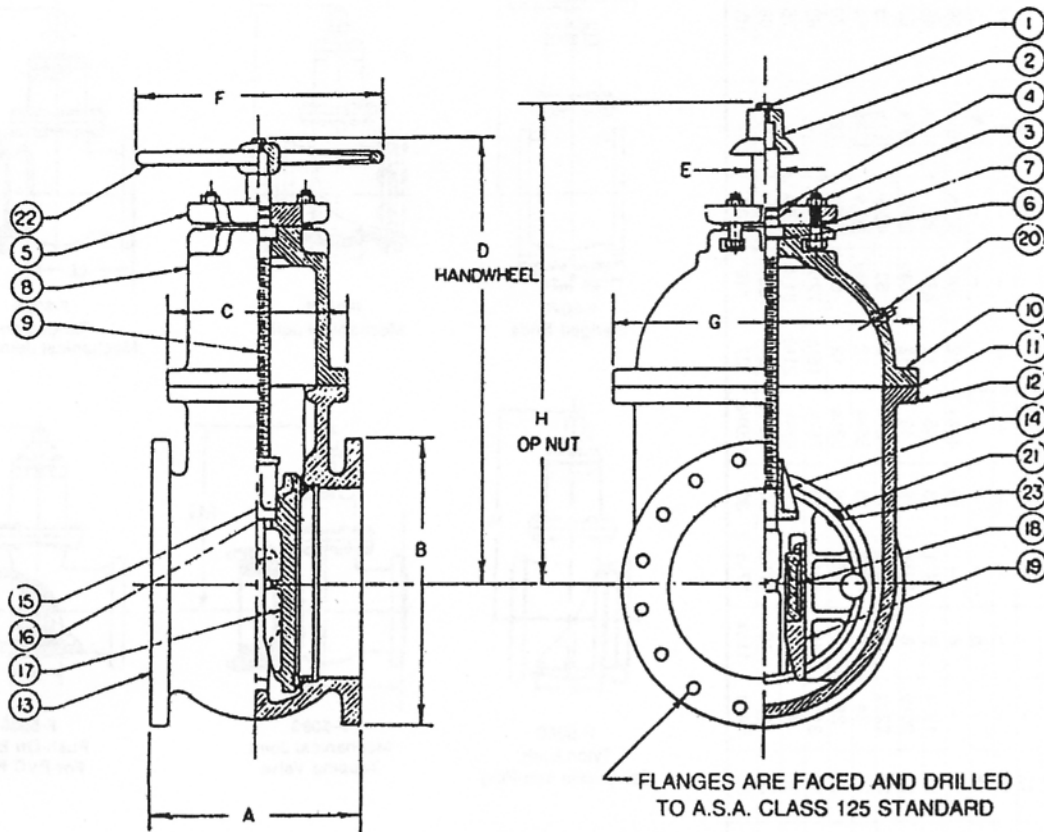
TURN TO OPEN ARE FOR VALVES WITHOUT GEARING

DIMENSIONS—INCHES

FLANGES ARE FACED AND DRILLED TO ANSI 125 POUND  
TEMPLATE, UNLESS OTHERWISE SPECIFIED

2"-12" FLANGED END  
F-5070 GATE VALVE

CLOW VALVE COMPANY



SEQ.	QTY.	DESCRIPTION	MATERIAL
1	1	CAPSCREW	STEEL
2	1	OPERATING NUT	CAST IRON
3		BOLTS & NUTS	RUST PROOF STEEL
4	2	"O" RINGS	RUBBER
5	1	"O" RING PLATE	CAST IRON
6	1	LOW TORQUE BEARING	DELRIIN 1
7	1	STUFFING BOX GASKET	COMPOSITION
8	1	COVER	CAST IRON
9	1	NON-RISING STEM	BRONZE
10		NECK-FLANGE BOLTS	RUST PROOF STEEL
11	1	NECK-FLANGE GASKETS	COMPOSITION
12		NECK-FLANGE NUTS	RUST PROOF STEEL
13	1	BODY	CAST IRON
14	1	GATE NUT	BRONZE
15	2	GATE RING	BRONZE
16	2	CASE RING	BRONZE
17	2	GATE	CAST IRON
18	2	WEDGE	BRONZE
19	2	HOOK	CAST IRON
20	1	PIPE PLUG	CAST IRON
21	4	PEGS-ON 10", 12" & 14" VALVES	BRONZE
22	1	HANDWHEEL	CAST IRON
23	2	STRAPS-ON 10", 12" & 14" VALVES	STAINLESS STEEL

VALVE SIZE	A	B	C	D	E	F	G	H	Weight	Turns to Open
2	7	6	5	11 1/4	3/8	7 1/4	5 1/8	11 1/4	30	5
2 1/2	7 1/2	7	5 1/8	13	3/8	7 1/4	6 1/8	13	30	6
3	8	7 1/2	5 1/2	14	3/8	7 1/4	7 1/8	14	50	7
4	9	9	7	15 1/4	1 1/8	10	9	15 1/4	90	15
5	10	10	7 3/4	16 1/4	1 1/8	10	10 1/8	16 1/4	120	18
6	10 1/2	11	9	18 1/2	1 1/4	12	12 1/8	18 1/2	166	21
8	11 1/2	13 1/2	10	21 1/8	1 3/8	14	15 1/8	21 1/8	288	27
10	13	16	10 1/8	28 1/4	1 1/2	18	18 1/4	28 1/4	405	33
12	14	19	11 1/4	30 3/4	1 1/2	18	20 1/4	30 3/4	565	39

**CLOW AWWA Butterfly Valves  
Meet or Exceed the Requirements  
of AWWA C504**

<b>Size Range</b>	<b>4"—48"</b>
-------------------	---------------

<b>Size Range</b>	<b>Water Working Pressure psi</b>	<b>Bubble Tight Test psi</b>	<b>Hydrostatic Test psi</b>
4"—12"	200	200	400
14"—48"	150	150	300

**Available End Connections & Size Range****Model No.**

Flange	3"—24"	4500
Flange	30"—48"	1450
Wafer	4"—20"	4500
M.J.	4"—24"	4500
M.J.	30"—48"	1450
Flange & M.J.	6"—8"—12"—16"	4500

**Accessories (Illustrated in the gate valve section)**

Floorstands	Chainwheels
Extension Stems	2" Operating Nuts
Stem Guides	Handwheels
Traveling Nut & Screw Actuator	"T" Handles
*Worm Gear Actuators	Floor Boxes
Hand Lever Actuators	*Limit Switches
*Electric Motor Actuators	
*Cylinder Actuators	

<b>Valve Size</b>	<b>Minimum Allowable Mating Pipe or Adapter Inside Diameter</b>
-------------------	-----------------------------------------------------------------

4"	3- <sup>3</sup> / <sub>8</sub> "
6"	5- <sup>1</sup> / <sub>16</sub> "
8"	7- <sup>3</sup> / <sub>4</sub> "
10"	9- <sup>7</sup> / <sub>16</sub> "
12"	11- <sup>9</sup> / <sub>16</sub> "
14"	12- <sup>7</sup> / <sub>8</sub> "
16"	14- <sup>15</sup> / <sub>16</sub> "
18"	16- <sup>15</sup> / <sub>16</sub> "
20"	18- <sup>15</sup> / <sub>16</sub> "
24"	22- <sup>7</sup> / <sub>8</sub> "
30"	26- <sup>1</sup> / <sub>2</sub> "
36"	33- <sup>1</sup> / <sub>8</sub> "
42"	39- <sup>1</sup> / <sub>8</sub> "
48"	44- <sup>3</sup> / <sub>8</sub> "

\*Note: Call Factory for Special Applications

## CLOW AWWA C504 Butterfly Valves

- For Underground Applications
- Now, with CLOW Butterfly Valves  
you gain new valve reliability,  
plus economy
- 4500—4"—24"
- NSF Approved

The CLOW Butterfly valve is rugged and dependable; it will work easily any time you need it. Because of this ruggedness and reliability—plus positive, 100% shut-off—you achieve a more efficient, trouble-free distribution system.

**No More Damaged Stems.** Since the CLOW Butterfly Valve does not "freeze" shut or stick, it is always readily operable. Should inexperienced workmen attempt to overtighten it, the tough 450 pounds torque rating of the operator at ends of travel protects stem and operating parts against damage. This torque rating is unparalleled in standard valves for this application. When it is considered that conventional water-main valves have torque limitations as low as 150 foot pounds, the margin of safety provided by this exclusive CLOW design is an important factor in long, trouble-free valve life.

**Bottle-Tight Seal.** With the CLOW Butterfly Valve, you get positive 100% shut-off. Rubber vane-seat and stainless steel valve-seat construction provides a permanent uninterrupted 360-degree bottle-tight closure.

**Water Sealed Out.** Underground operator and end cover are permanently sealed against ground-water infiltration.

**Working Parts Corrosion-Free.** All critical bearing and sealing surfaces are stainless steel, Teflon® or rubber—assures easy and efficient valve operation, permanently.

**Low Initial Cost.** The CLOW Butterfly Valve has standardized components which offer you lowest initial cost and off-the-shelf availability. Expensive accessories are not required. No by-passes, special gearing, etc.

**Easy Installation.** The CLOW Butterfly Valves are compact, light-weight, easy to install. Installation costs are kept to a minimum.

**Maintenance-Free.** Permanently lubricated—no packing adjustment, no periodic exercising, no stem replacement of the CLOW Valve is required. The closing action of the vane is self-cleaning and there are no pockets in which sediment or sludge formations can deposit, resulting in longer lifetime service.

\*DuPont registered trade name.

**Available in class 250**

**U.S.  
PIPE**

# **METROSEAL® 250 Resilient Seated Gate Valves 3" - 16"**

*For Water, Wastewater, Fire Protection  
and Industrial Applications*

*2001 Edition*



# **METROSEAL® 250**

## **Resilient Seated Gate Valves 3" - 16"**

### **INTRODUCTION**

The 3"-16" METROSEAL 250 Valves featured in this publication are rated at 250 psi. They conform fully to ANSI/AWWA C509 *Resilient-Seated Gate Valves For Water Supply Service* and ANSI/AWWA C550 *Protective Epoxy Interior Coatings For Valves And Hydrants*. The body, bonnet and gate are Ductile Iron, instead of gray iron (3" gates are bronze).

### **TYPICAL APPLICATIONS FOR METROSEAL VALVES**

#### **General**

METROSEAL 250 Resilient-Seated Gate Valves are designed for use in virtually any type of buried or above-ground service for water transmission or distribution lines, sewer force mains and certain types of industrial service within the operating pressure range of the valve. The greatest use is in buried service where low cost, positive and reliable shutoff and minimum maintenance are important requirements. Resilient Seated Gate Valves generally operate fully opened/fully closed, although METROSEAL 250 Valves may be operated in the throttling mode when required.

#### **Buried Service**

METROSEAL 250 Valves are designed for buried service. It is not necessary to install them in a vault or manhole as is appropriate for other types of valves where maintenance is required and frequent repairs may be necessary. Years of experience have demonstrated that resilient-seated gate valves rarely require maintenance and are typically buried underground without the need for access. Buried valves are normally installed in the vertical position and actuated through a standard valve box by a T-Handle operating wrench (or power operator) which engages the 2" square operating nut. For shallow depths of cover, 16" valves may be installed in the horizontal position and activated through a bevel gear unit mounted on the valve. Buried service valves are specified with mechanical joints or TYTON Joint® Pipe when used with pipe having Ductile Iron pipe outside diameters.

# METROSEAL® 250

## Resilient Seated Gate Valves 3" - 16"

### Interior or Above Ground Service

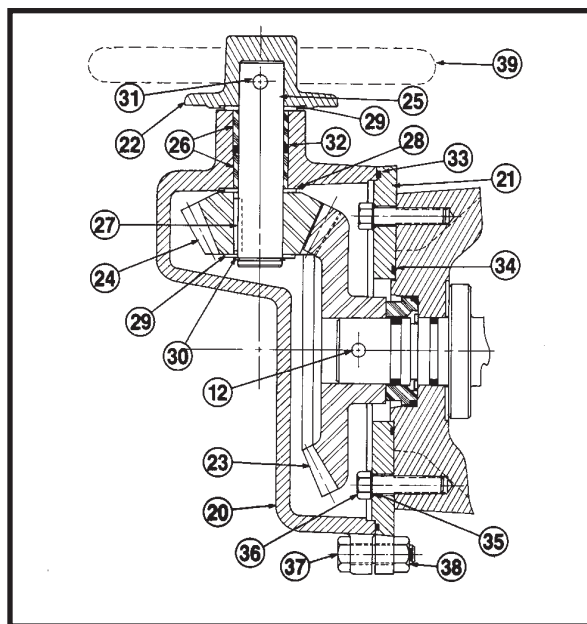
METROSEAL 250 Valves with flanged joints are used for this type of service, particularly in water and sewage treatment plants, industrial use, pump stations, meter pits, etc. Flanged valves are furnished with ANSI/AWWA C115/A21.15 standard flange drilling, which will also connect to ANSI/AWWA C207 Class D steel flanges and ASME B16.1, Class 125 flanges. Flanged gaskets 1/8" thick should be used. U.S. Pipe's FLANGE-TYTE® Gasket is recommended.

The METROSEAL 250 Valve is suitable for any position of installation: vertical, horizontal, flat or angled. If sediments are present, care should be taken that the bonnet is not in a position to collect sediments which could interfere with operation of the valve. Gear operators can be rotated as required.

### VALVE GEARING

METROSEAL 250 Valves operate with considerably less torque than double disc metal-seated gate valves and may be operated without gearing at normal operating pressures. It is recommended you consult with our Valve and Hydrant Sales Office if gearing is specified.

When specified, valves can be supplied with bevel gearing. Gear operators are the totally enclosed type, oil filled and designed for buried and submerged service. Gear housings are Ductile Iron. Gears are steel and pinion shafts are stainless steel. Shaft bearings are Teflon with "O" Ring seals.

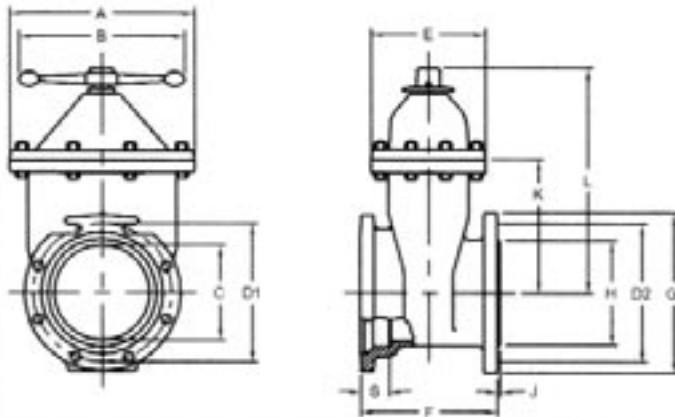


NO.	NAME OF PART	NO. reqd.	MATERIAL
12	PIN	1	STEEL
20	GEAR BOX, EBG	1	DUCTILE IRON
21	PLATE, GEAR, EBG	1	DUCTILE IRON
22	OPERATING NUT	1	CAST IRON
23	GEAR, BEVEL, EBG	1	STEEL
24	GEAR, PINON, EBG	1	STEEL
25	SHAFT, PINON, EBG	1	STN. STEEL
26	BEARING, SHAFT	2	TEFLON
27	KEY, PINON SHAFT	1	STEEL
28	WASHER, THRUST	1	BRASS
29	WASHER, ANTI-FRICTION	2	THERMOPLASTIC
30	RING, RETAINER	1	STEEL
31	PIN, OPERATING NUT	1	STEEL
32	O-RING, SHAFT	1	RUBBER
33	O-RING, GEAR BOX	1	RUBBER
34	O-RING, GEAR PLATE	1	RUBBER
35	O-RING, SCREW SEAL	4	RUBBER
36	BOLT, HEX HEAD	4	STEEL
37	BOLT, HEX HEAD	6	STEEL
38	NUT, HEX	6	STEEL
39	HANDWHEEL, EBG - (OPTIONAL)	1	DUCTILE IRON

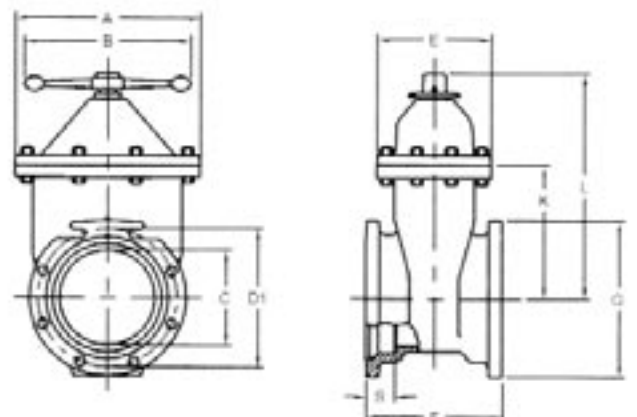
# Dimensional Charts

NO.	DIMENSION DESCRIPTION	NOMINAL VALVE SIZE						
		3"	4"	6"	8"	10"	12"	16"
A	Bonnet Flange Length	8-3/8	9-13/16	13	15-5/8	19-7/16	21-1/8	25-5/8
B	Handwheel Diameter	10	10	12	14	23	23	31-1/2
C	Waterway Diameter	3-1/32	4-1/32	6-1/8	8-1/16	10-1/8	12-1/8	16-1/8
D1	Mechanical Joint Bolt Circle	6-13/64	7-1/2	9-1/2	11-3/4	14	16-1/4	21
D2	Flanged Bolt Circle	6	7-1/2	9-1/2	11-3/4	14-1/4	17	21-1/4
E	Bonnet Flange Width	4-1/8	7-1/4	8-3/8	9-5/8	10-15/16	11-1/16	13-5/8
F	Face-to-Face (End to End) Mechanical Joint	8-1/2	9-1/4	10-1/2	11-1/2	14-1/2	15	22
	Flanged, Face-to-Face	8	9	10-1/2	11-1/2	13	14	16
	Mechanical Joint X Flanged & Mechanical Joint X Flanged Tapping	8-1/2	9-3/32	10-3/4	12-1/2	13-3/4	14-1/2	19-1/2
	TYTON® Valve	N/A	11	12-3/8	14	14-3/8	14-7/8	23
	TYTON® X Flanged Valve & TYTON® X Flanged Tapping Valve	N/A	10-5/16	11-7/16	13-1/16	14	14-3/4	N/A
G	Flange Diameter	7-1/2	9	11	13-1/2	16	19	23-1/2
H	Tapping Flange Lip Diameter	3-63/64	4-63/64	6-63/64	8-63/64	10-63/64	12-63/64	16-15/16
J	Tapping Flange Lip Height	3/16	3/16	1/4	1/4	1/4	1/4	1/4
K	Body-Bonnet Flange to Centerline of Waterway	5-27/32	6-5/16	8-19/32	11-1/4	13-1/4	15-11/16	19-11/16
L	Top of NRS Nut or Handwheel to Center of Waterway	10-1/2	12-13/16	16-1/4	19-3/16	24-1/2	27-5/16	34-3/8
M	Top of OS&Y Stem to Centerline of Waterway Valve Closed	N/A	18-13/16	25-5/16	30-1/8	38-3/4	41-5/8	55-1/8
	Valve Open	N/A	23-3/8	32-1/16	38-3/4	49-1/2	53-7/8	71-3/8
N	Number of Turns to Open (NRS & OS&Y)	13-1/4	13	19	25	32	37	50
P	Maximum Tap Size (Optional)	1/2	1/2	3/4	3/4	1	1	1
S	Depth of Socket Mechanical Joint Socket	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	3-5/8
	TYTON® Valve Socket	N/A	3-1/2	3-1/2	3-3/4	3-7/8	3-7/8	5

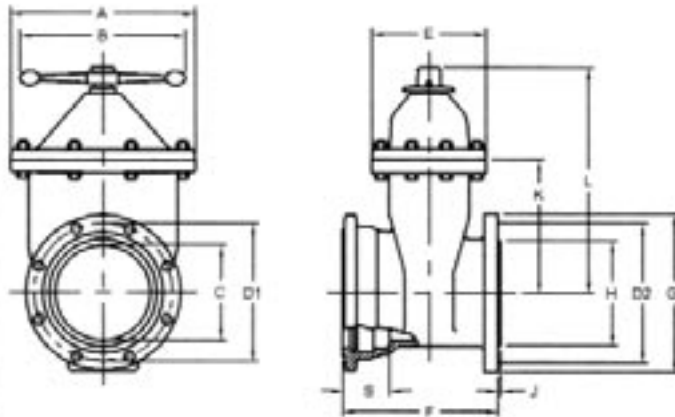
#5860 Mechanical Joint x Flange Tapping Valve



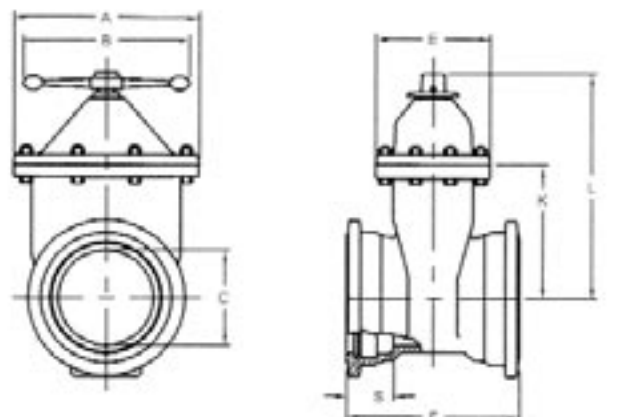
#5460 Mechanical Joint x Mechanical Joint Valve



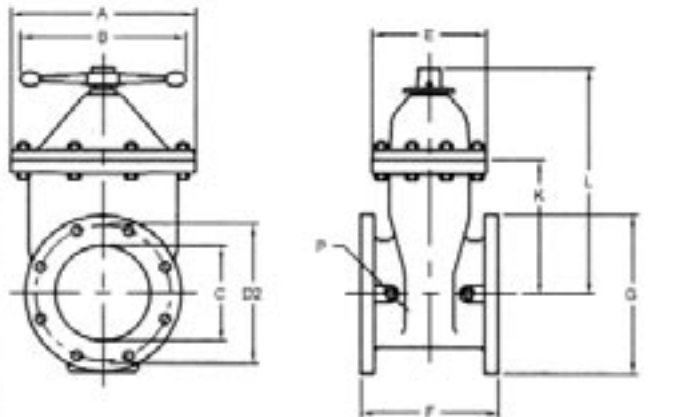
#5940 TYTON® x Flange Tapping Valve



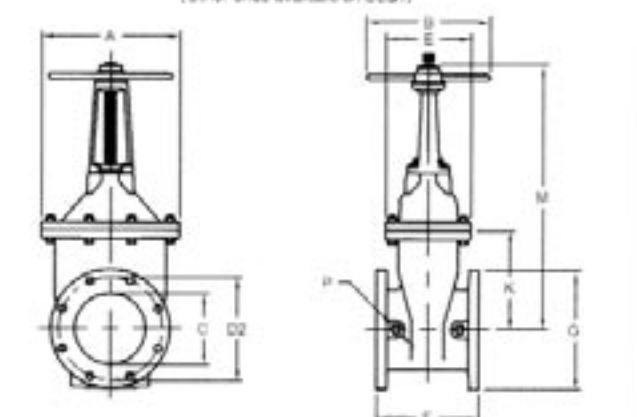
#5080 TYTON® x TYTON® Valve

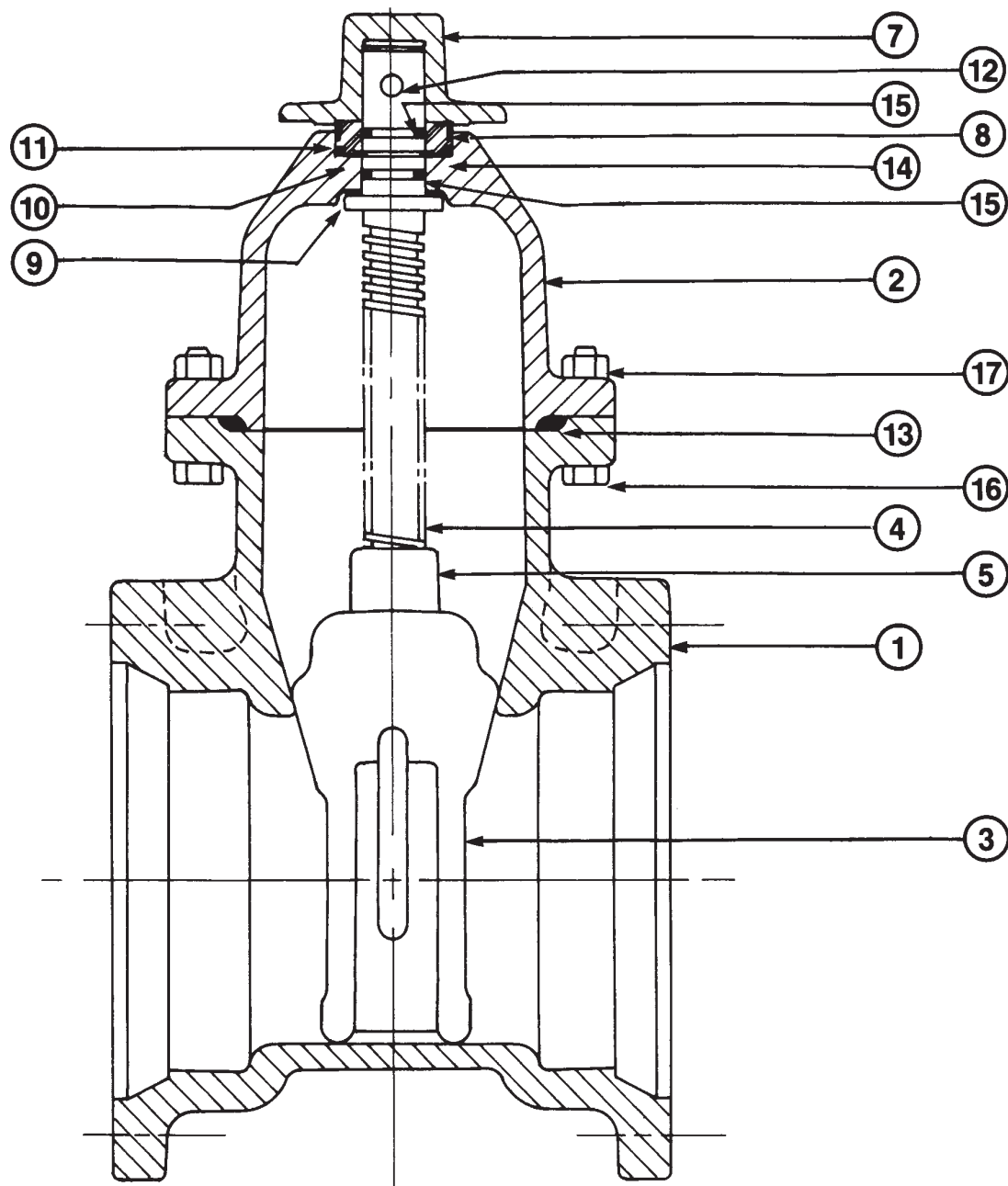


#5150 Flange x Flange Valve



#5120 Flange x Flange OS&Y Valve  
(Other ends available on OS&Y)

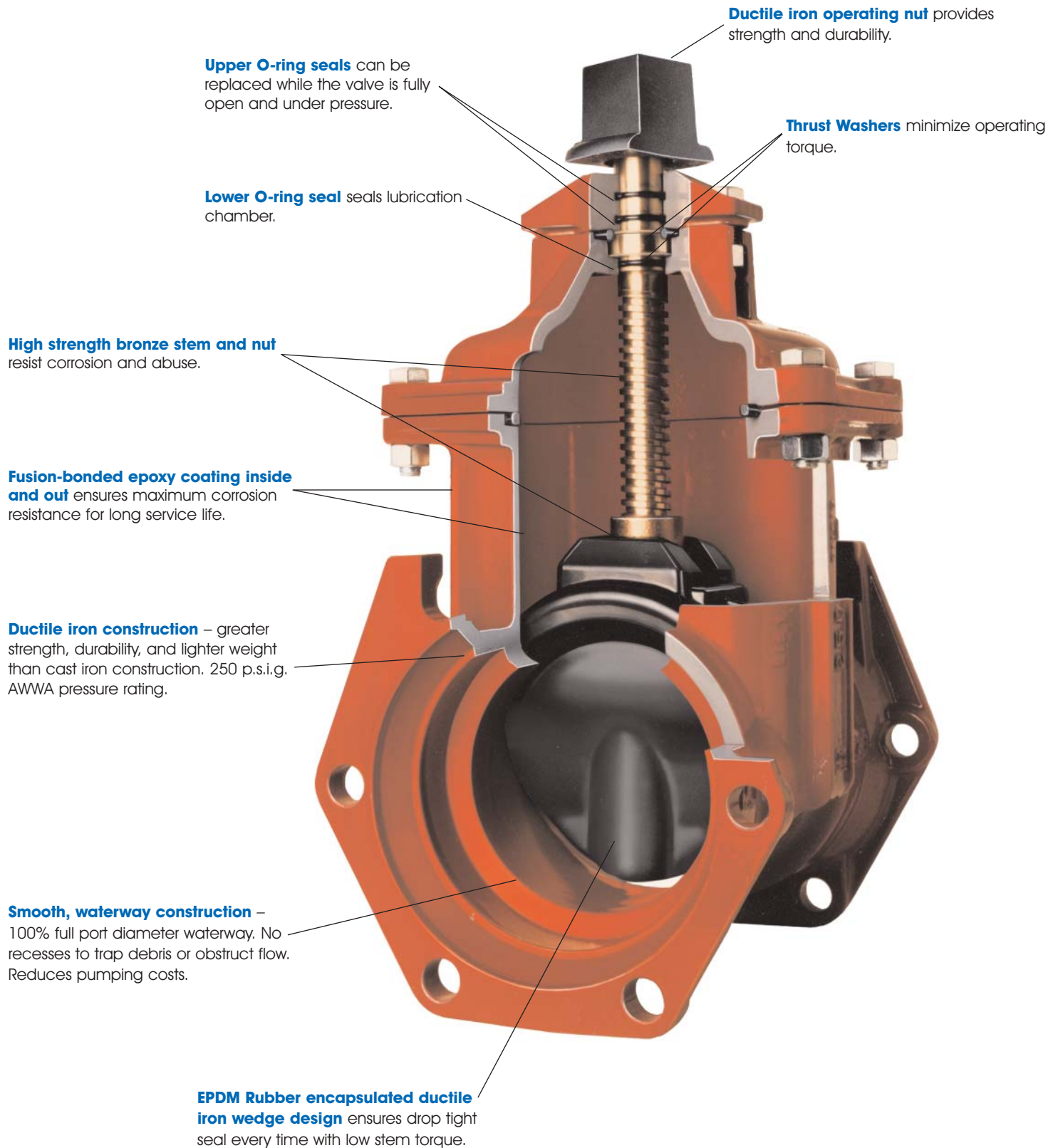




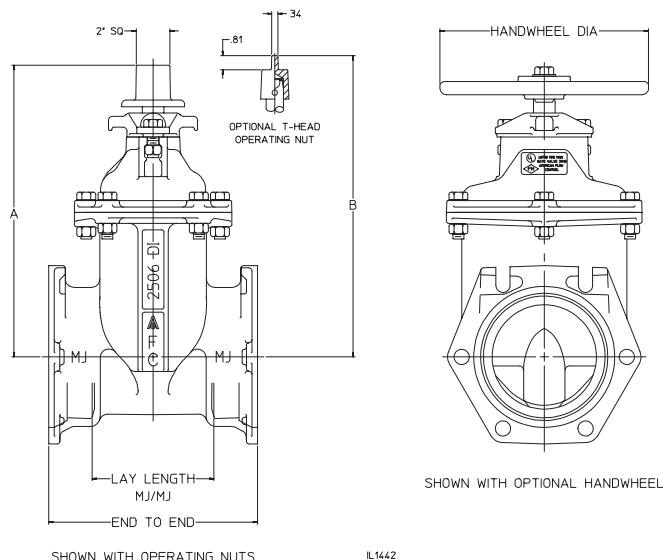
NON-RISING STEM

NO.	NAME OF PART	NO. reqd.	MATERIAL
1	BODY	1	DUCTILE IRON
2	BONNET	1	DUCTILE IRON
3	GATE, RUBBER COVERED	1	DUCTILE IRON
4	STEM	1	BRONZE
5	STEM NUT	1	BRONZE
7	OPERATING NUT	1	GRAY IRON
8	CARTRIDGE	1	THERMOPLASTIC
9	BONNET TRUST WASHER	1	THERMOPLASTIC

NO.	NAME OF PART	NO. reqd.	MATERIAL
10	RETAINER RING	1	THERMOPLASTIC
11	DIRT SEAL	1	RUBBER
12	PIN, OPERATING NUT	1	STEEL
13	SEAL RING	1	RUBBER
14	"O" RING (CARTRIDGE)	1	RUBBER
15	"O" RING (STEM)	2	RUBBER
16	BOLT, HEX HEAD		STAINLESS STEEL
17	NUT, HEX		STAINLESS STEEL



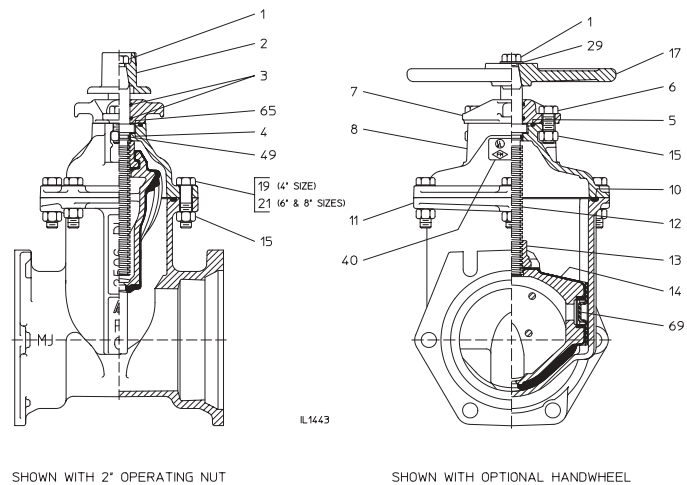
## SERIES 2500-STANDARD NRS DIMENSIONS, 2"-12" SIZES



DIMENSION	VALVE SIZE							
	2"	2-1/2"	3"	4"	6"	8"	10"	12"
A	9.25	11.03	11.84	13.72	16.75	20.19	24.12	27.69
B	10.22	N/A	N/A	N/A	N/A	N/A	N/A	N/A
End to End - MJ/MJ	8.25	N/A	8.62	11.00	12.00	12.50	14.75	16.62
Lay Length - MJ/MJ	3.25	N/A	3.62	6.00	7.00	7.50	9.75	11.62
End to End - FL/FL (Class 125)	7.00	7.50	8.00	9.00	10.50	11.50	13.00	14.00
End to End - FL/FL (Class 250)	N/A	N/A	11.12	12.00	15.88	16.50	18.00	19.75
End to End - TY/TY	N/A	N/A	N/A	13.50	16.88	18.50	20.50	22.38
End to End - PO/PO (Push-On)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
End to End - FL/MJ (Class 125)	N/A	N/A	N/A	10.00	11.25	12.62	13.88	15.31
End to End - FL/TY (Class 125)	N/A	N/A	N/A	11.25	13.69	15.00	16.75	18.19
End to End - PVC/PVC	10.75	11.12	11.38	13.50	16.88	18.50	N/A	N/A
End to End - Threaded	6.25	7.38	7.38	N/A	N/A	N/A	N/A	N/A
Handwheel Diameter	8.00	8.00	8.00	10.00	12.00	14.00	16.00	16.00
No. of Turns to Open	9	11	13	13	19	26	32	38

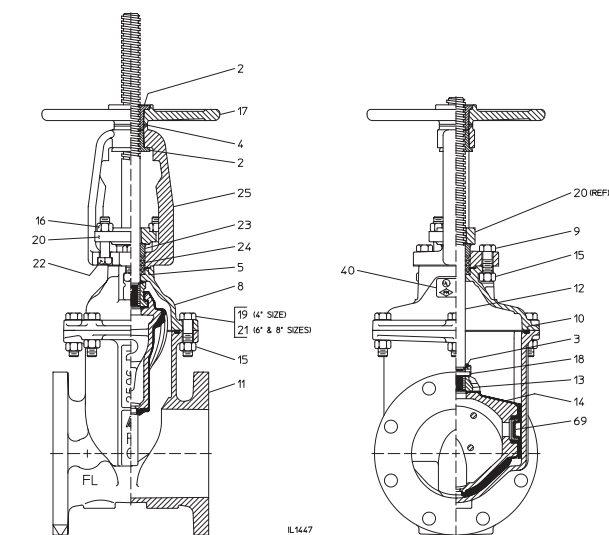
1. Valves 2"-12" meet or exceed requirements of ANSI/AWWA C515.
2. 250 p.s.i.g. AWWA rated working pressure. 500 p.s.i.g. test pressure.
3. 2" through 16" valves may be ordered in configurations which are UL Listed and/or FM Approved.
4. Fusion-bonded epoxy coating meets or exceeds requirements of ANSI/AWWA C550.
5. Flanged ends are in accordance with ANSI/AWWA C110/A21.10 (ANSI B16.1, Class 125).
6. Threaded ends are in accordance with ANSI B16.4, Class 125.
7. Mechanical joint ends are in accordance with ANSI/AWWA C111/A21.11.
8. Tyton® ends and push-on ends are in accordance with ANSI/AWWA C111/A21.11 for use with ductile iron pipe.
9. PVC ends are suitable for use on steel (IPS) sizes of PVC or steel pipe.
10. 2" through 12" valves are certified to ANSI/NSF Standard 61.
11. It is recommended that stems be vertical in raw sewage applications.
12. 2"-8" AWWA and UL/FM Pressure Rating 250 p.s.i.g., 10"-16" UL/FM Pressure Rating 200 p.s.i.g.

NRS Parts List



Reference Number	Description	Material
1	Hex Head Bolt, 5/8-11 x 1"	Zinc Plated Steel
2	Operating Nut, 2" Square	Ductile Iron
3	O-ring	Nitrile Rubber
4	Lower Thrust Washer	Nylon
5	Stuffing Box Gasket	Nitrile Rubber O-ring
6	Hex Head Bolt, 5/8-11 x 1-3/4"	Zinc Plated Steel
7	Stuffing Box	Ductile Iron
8	Valve Bonnet	Ductile Iron
10	Throat Flange Gasket	EPDM Rubber
11	Valve Body	Ductile Iron
12	Stem	Manganese Bronze
13	Wedge Nut	Manganese Bronze
14	Resilient Wedge	Ductile Iron, Coated with EPDM Rubber
15	Hex Nut, 5/8-11	Zinc Plated Steel
17	Handwheel	Ductile Iron
19	Hex Head Bolt, 5/8-11 x 2-1/4"	Zinc Plated Steel
21	Hex Head Bolt, 5/8-11 x 2-1/2"	Zinc Plated Steel
29	Flat Washer, 5/8	Zinc Plated Steel
40	UL/FM Label	Pressure Sensitive Acrylic Film
49	O-ring	Nitrile Rubber
65	Upper Thrust Washer	Stainless Steel
69	Wedge Guide Cover	Acetal

OS & Y Parts List



Ref No.	Description	Material
2	Stem Nut	Bronze
3	O-ring	Nitrile Rubber
4	Handwheel Washer	Brass
5	Stuffing Box Gasket	Nitrile Rubber
8	Bonnet	Ductile Iron
9	Hex Head Bolt, 5/8- 11 x 2"	Zinc Plated Steel
10	Throat Flange Gasket	EPDM Rubber
11	Valve Body	Ductile Iron
12	Stem	Free Cutting Brass
13	Wedge Nut	Ductile Iron
14	Resilient Wedge	Ductile Iron, Coated with EPDM Rubber
15	Hex Nut, 5/8 -11	Zinc Plated Steel
16	Hex Nut, 5/8 -11	Brass
17	Handwheel	Ductile Iron
18	Groove Pin	Stainless Steel
19	Hex Head Bolt, 5/8 - 11 x 2-1/4"	Zinc Plated Steel
20	Gland Follower	Ductile Iron
21	Hex Head Bolt, 5/8"- 11 x 2-1/2"	Zinc Plated Steel
22	Hex Head Bolt, 5/8"- 11 x 2-3/4"	Zinc Plated Steel
23	Gland	Sintered Bronze, Oil Impregnated
24	Packing Ring	Tallow Impregnated Flax
25	Yoke	Ductile Iron
40	UL/FM Label	Pressure Sensitive Acrylic Film
69	Wedge Guide Cover	Acetal

## FEATURES

The **Series 2500** Ductile Iron 250 p.s.i.g. AWWA Resilient Wedge Gate Valve is designed for use in drinking water, sewage and fire protection systems as well as irrigation and backflow control systems.

### Ductile Iron Construction

The ductile iron body, bonnet and wedge provide strength and a pressure rating that meets or exceeds the requirements of AWWA C515. Strength more than doubles that provided by cast iron designs, and the pressure rating is 250 p.s.i.g. All this strength and higher pressure rating is provided in a compact, lightweight, and easy-to-handle ductile valve.

### Fusion-Bonded Epoxy

The **Series 2500** valve is fully epoxy coated both on the interior as well as the exterior. The fusion-bonded coating is applied prior to assembly so that even the bolt holes and body-to-bonnet flange surfaces are fully epoxy coated.

### Triple O-ring Stem Seals

This valve features triple O-ring stem seals. Two O-rings are located above, and one O-ring is located below the thrust collar. The lower two O-rings provide a permanently sealed lubrication chamber that will make the valve easier to operate over a longer period of time. The upper O-ring assures that sand, dirt or grit cannot enter the valve to cause damage to the lower O-rings. This is especially important for buried and sewage service applications.

### Thrust Washers

Two thrust washers are used. One is located above and one is located below the thrust collar. These thrust washers assure easy operation at all times.

### No Flat Gaskets

The body-to-bonnet and bonnet-to-bonnet cover seals are pressure energized O-rings. This eliminates the need for excessive bolt loading which is required by designs that use flat gaskets. The O-rings are reusable which eliminates down time during any needed repair.

The **Series 2500** Resilient Wedge Gate Valve is furnished in configurations that are listed by Underwriters Laboratories, Inc. and approved by Factory Mutual Research Corp.

The **Series 2500 Ductile Iron Resilient Wedge Gate Valve** has these standard features:

- **UL Listed-FM Approved**
- **Seat Tested 250 p.s.i.g.**
- **Fusion-Bonded Epoxy Coating Complies With ANSI/AWWA C550**
- **250# Raised Face Flanges Available**
- **Ductile Iron Body, Bonnet and Wedge, Operating Nut**
- **Shell Tested 500 p.s.i.g.**
- **250 p.s.i.g. AWWA Pressure Rating**
- **Rubber Encapsulated Wedge**
- **Triple O-ring Stem Seals**
- **Smooth (No Pocket) Waterway**
- **100% Leak-Tight Closure**
- **NSF Standard 61 Certified**
- **AWWA C515**



## SPECIFICATIONS

Valves 2"-36" shall be resilient wedge type rated for 250 p.s.i.g. cold water working pressure. All ferrous components shall be ductile iron. Valves 3"-36" shall be in full compliance with AWWA C515. The words "D.I." or "Ductile Iron" shall be cast on the valve or stamped on a permanently attached corrosion resistant metal tag. The wedge shall be ductile iron encapsulated with rubber.

The wedge shall be symmetrical and seal equally well with flow in either direction.

Valves shall be NSF Standard 61 certified.

Bolting materials shall develop the physical strength requirements of ASTM A307 and may have either regular square or hexagonal heads with dimensions conforming to ANSI B18.2.1. Metric size socket head cap screws, therefore, are not allowed.

Operating nut shall be constructed of ductile iron and shall have four flats at stem connection to assure even input torque to the stem.

All gaskets shall be pressure energized O-rings.

Stem shall be sealed by three O-rings. The top two O-rings shall be replaceable with valve fully open and

while subject to full rated working pressure. O-rings set in a cartridge shall not be allowed.

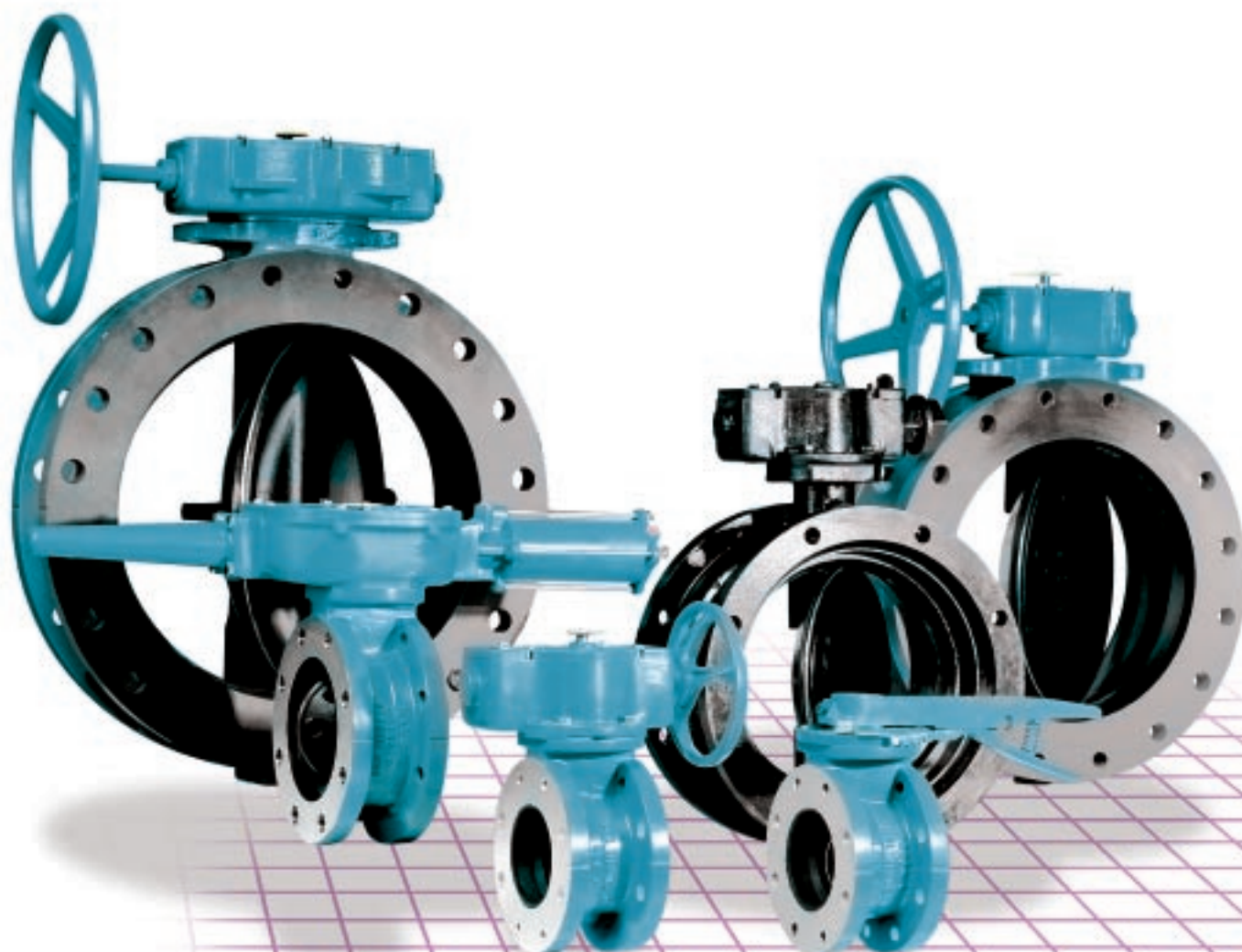
Valve shall have thrust washers located with (1) above and (1) below the thrust collar to assure trouble-free operation of the valve.

All internal and external surfaces of the valve body and bonnet shall have a fusion-bonded epoxy coating, complying with ANSI/AWWA C550, applied electrostatically prior to assembly.

Valves shall be American Flow Control's **Series 2500 Ductile Iron Resilient Wedge Gate Valve**.



## AWWA BUTTERFLY VALVES



## 3-20" (80-500mm) Design Features for Years of Trouble-Free Service

### Body Styles

Flanged, ANSI B16.1 Class 125,  
3-20" (80-500mm), Valve Class 150B

Flanged, ANSI B16.1 Class 125,  
3-20" (80-500mm), Valve Class 250B\*

Flanged, ANSI B16.1 Class 250,  
3-18" (80mm-450mm), Valve Class 250B\*

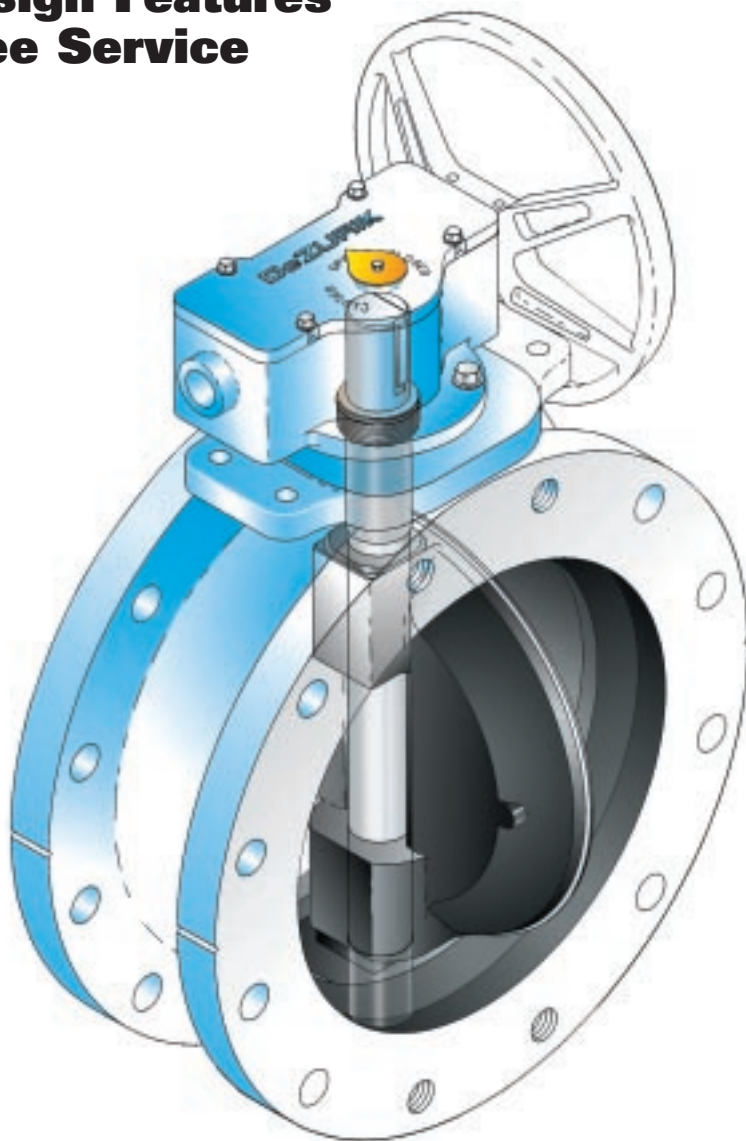
Mechanical Joint, ANSI/AWWA C111/A21.11,  
4-20" (100-500mm), Valve Class 150B

Mechanical Joint, ANSI/AWWA C111/A21.11,  
4-20" (100-500mm), Valve Class 250B\*

\*These valve classes meet or exceed the full intent of AWWA C504 including design, material, and testing requirements.

### Corrosion Resistant Shaft

Stainless steel shafts provide corrosion resistance in bearing and packing journal areas to ensure long bearing and packing life. Standard shaft materials include 304, 316, and 17-4 PH stainless steel.



### Long Life, Low Friction Bearings

Upper and lower journal shaft bearings are designed to provide high compressive strength, low friction and require no lubrication.

### Self-Compensating Shaft Seals

Shaft seals are self-compensating, V-type packing. DeZURIK uses a minimum of four sealing rings. This proven multi-ring sealing technology offers reliability and continuous self-adjustment.

## Fully Rubber Lined Body

A fully rubber lined body is standard, eliminating the need for inner body coating, and protecting the body against corrosion buildup.

## Integrity of the Proven Molding Process

The rubber bonding process used on DeZURIK AWWA Butterfly Valves is proven by more than 50 years of field experience. AWWA C504 requires testing of the bonding process per ASTM D429, method B. The test requires a 1" (25mm) wide strip of rubber to withstand a minimum 75 lbs. pull force (at a 90° angle) before tearing away from the valve body. During destructive testing, the rubber usually tears before the bond between the rubber seat and metal valve body gives way, demonstrating that the bond is stronger than the rubber. Based on extensive experience and proof of design testing, DeZURIK can assure that a molded-in body seat remains maintenance-free for the life of the valve.

## Choice of Seat Materials

Standard seat materials include Acrylonitrile-Butadiene (NBR) for water service and EPDM for high-temperature applications such as air blower lines.

## 4° Sealing Surface

The spherical sealing surface, molded into the valve seat, provides constant interference between the sealing surface and the disc edge for a full 4° sealing range. This allows the actuator to be adjusted within the correct sealing range while the valve is under pressure and flow.

## Molded-In Body Seat

The pressure/temperature molding process used on AWWA Butterfly Valves, (used on DeZURIK Eccentric Plug Valves for over 50 years) provides a long-lasting, maintenance-free seat. DeZURIK's molded-in body seat lasts far beyond the 10,000 cycles required by AWWA C504. The molded seat-in-body design provides:

- uniform rubber thickness;
- consistent interference between the rubber seating surfaces and the stainless steel disc edge;
- tight tolerance control on critical seat dimensions.



## Disc Locators

An innovative, molded-in, disc-centering device aligns the disc in the seat, providing a positive seal and longer seat life. Disc hubs, supported by the locators, ensure disc location accuracy. The off-set style disc design means disc-alignment locators are separate from the sealing surface, extending valve seat life.

## Proven Disc-To-Shaft Pinning

All DeZURIK disc-to-shaft pinning connections conform to AWWA C504. Disc-to-shaft pinning is provided by a stainless steel torque screw on sizes 3–12" (80–300mm). Sizes 14–20" (350–500mm) utilize a tangential pin which is locked in place with a stainless steel set screw.

## High Temperature Applications

For operating temperatures to 290° F (143°C), EPDM seat material and packing, high temperature bearings, and high temperature paint on the disc are available as standard options.

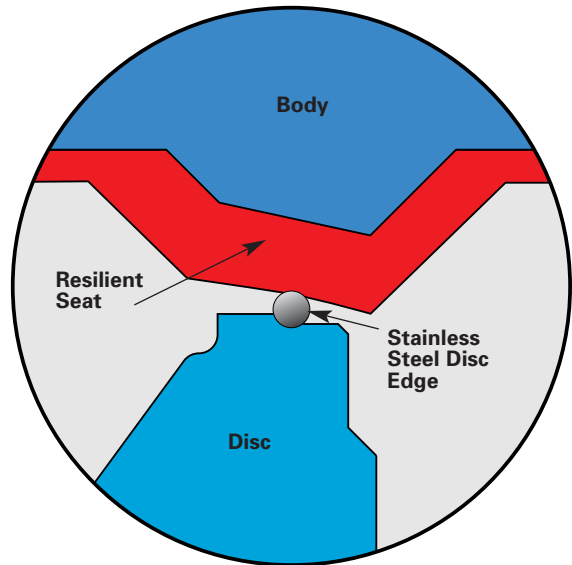
## Integral Shaft Bearing Seals

To ensure all components of the valve remain maintenance-free, the molded-in body seat and body liner contain integral shaft bearing seals in the upper and lower journals. These seals protect bearing journal areas against sedimentation, mineral deposits, and corrosion particles — all of which can damage bearings and shorten valve life.

## Seat-In-Body vs. Seat-On-Disc

DeZURIK's AWWA Butterfly began its evolution over 40 years ago. For over 25 years, a stationary rubber seat located in the valve body has been the standard. This feature is fundamental to the long-term performance of the valve.

After years of service, water distribution valves and pipelines (regardless of material) suffer the effects of abrasive corrosion and tuberculation buildup. When the rubber seat of a butterfly valve is located on the moving disc edge, it will erode or tear away as it plows its way through line buildup, causing the valve to leak. With a rubber seat-in-body design, the stainless steel disc provides the resistance necessary to plow through line buildup without seat-on-disc edge damage.

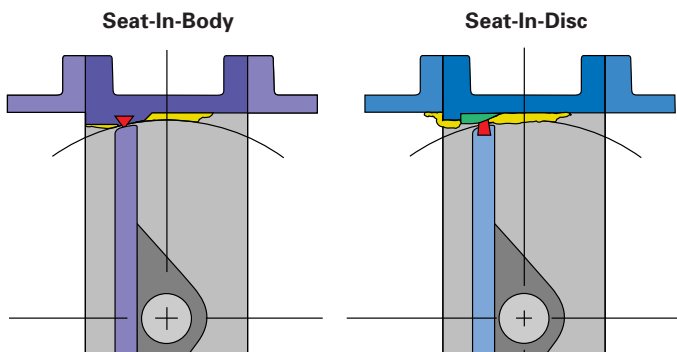


## Off-Set Disc Design

The off-set disc provides an uninterrupted 360° sealing surface. The sealing surface is not interrupted by the valve shaft and does not have any continuous contact points between the rubber seat and the disc edge. This results in a longer seat life.

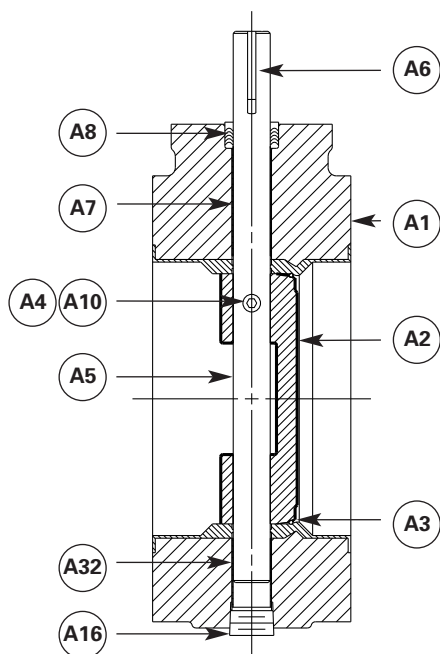
## Stainless Steel Disc Edge

Solid 316 stainless steel disc edge provides the corrosion and abrasion resistance essential for long-lasting, maintenance-free service.

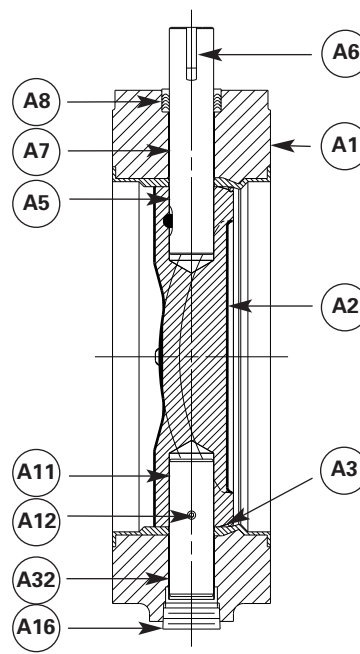


# Materials of Construction

3-16" (80-400mm)



18 & 20" (450 & 500mm)



## 3-20" (80-500mm) Valve Sizes

Item	Description	Material
A1	Body	Cast Iron ASTM A126 Class B Ductile Iron ASTM A536 Grade 65-45-12
A2	Disc	Cast Iron ASTM A48 Class 40C Ductile Iron ASTM A536 Grade 65-45-12 316 Stainless Steel, ASTM A743, Type CF8M
A3	Disc Seating Edge	316 Stainless Steel, ASTM A276, Type 316
A4	Tangential Pin 14-20" (350-500mm)	316 Stainless Steel, ASTM A276, Type 316 (250B) 17-4 PH Stainless Steel, H1100
A5	Shaft 3-16" (80-400mm) Upper Shaft 18-20" (450-600mm)	304 Stainless Steel, ASTM A276, Type 304 316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM A564, Type 630 Condition 1150
A6	Key	Steel AISI 1018
A7	Upper Journal Bearing	Nylon and Molybdenum Disulphide Composition (NBR Seat) PTFE (EPDM Seat) (250B) Teflon/Dacron Fabric Liner, Fiberglass back-up shell
A8	Packing	Acrylonitrile Butadiene (NBR Seat) Ethylene Propylene Diene Terpolymer (EPDM Seat)
A10	Torque Screw 3-12" (80-300mm)	304 Stainless Steel, ASTM A276, Type 304 (250B) 17-4 PH Stainless Steel, Condition 1100
A10	Set Screw 14-20" (350-500mm)	18-8 Stainless Steel
A11	Lower Shaft 18-20" (450-600mm)	304 Stainless Steel, ASTM A276, Type 304 316 Stainless Steel, ASTM A276, Type 316 17-4 PH Stainless Steel, ASTM A564, Type 630 Condition 1150
A12	Set Screw 18-20" (450-500mm)	18-8 Stainless Steel
A16	Plug 3-20" (80-500mm)	3-8" (80-200mm) Carbon Steel, ASTM 105 10-20" (250-500mm) Malleable Iron, ASTM A47-52 Grade 35018 (250B, 3-6" (80-150mm)) Carbon Steel, ASTM 105 (250B, 8-20" (200-500mm)) Malleable Iron, ASTM A47-52 Grade 35018
A32	Lower Journal Bearing	Nylon and Molybdenum Disulphide Composition (NBR Seat) PTFE (EPDM Seat) (250B) Teflon/Dacron Fabric Liner, Fiberglass back-up shell

# Cv/Kv Values

## Class 150B

Valve Size	100% Cv/Kv	
	Flat Cv/Kv	Dome Cv/Kv
3" 80mm	362 313	356 308
4" 100mm	658 569	646 559
6" 150mm	1,380 1,194	1,360 1,176
8" 200mm	2,440 2,111	2,390 2,067
10" 250mm	3,910 3,382	3,840 3,322
12" 300mm	5,730 4,960	5,630 4,870
14" 350mm	7,840 6,782	7,700 6,661
16" 400mm	10,200 8,823	9,980 8,633
18" 450mm	12,600 10,899	12,400 10,726
20" 500mm	15,800 13,667	15,500 13,408
24" 600mm	22,900 19,809	22,500 19,463

## Class 25A, 75B, 150B

Valve Size	100% Cv/Kv	
	Flat Cv/Kv	Dome Cv/Kv
30" 750mm	36,500 31,573	35,900 31,054
36" 900mm	53,200 40,018	52,300 45,240
42" 1100mm	73,100 63,232	71,800 62,107
48" 1200mm	109,000 94,285	103,000 89,095
54" 1400mm	140,000 121,100	131,000 113,315
60" 1500mm	173,000 149,645	163,000 140,995
66" 1700mm	210,000 181,650	198,000 171,270
72" 1800mm	250,000 216,250	236,000 204,140

## % Open vs. % Cv/Kv 3-42" (80-1100mm)

% Open	Flat Cv/Kv	Dome Cv/Kv
10	3 3	3 3
15	4 4	4 4
20	6 5	5 4
25	8 7	7 6
30	10 9	9 8
35	12 12	11 10
40	15 13	14 12
45	19 16	18 16
50	23 20	22 19
55	28 24	27 23
60	35 30	34 29
65	42 36	41 36
70	49 42	49 42
75	55 48	58 50
80	61 53	66 57
85	69 60	75 65
90	79 68	87 75
95	91 79	98 85
100	100 87	100 87

## 48-72" (1200-1800mm)

% Open	Flat Cv/Kv	Dome Cv/Kv
10	1 1	2 2
15	2 2	2 2
20	4 4	3 3
25	5 4	4 4
30	6 5	6 5
35	7 6	8 7
40	9 8	10 9
45	13 11	14 12
50	15 13	18 16
55	18 16	22 19
60	23 20	27 23
65	28 24	33 29
70	35 30	41 36
75	44 38	48 42
80	55 48	59 51
85	67 58	71 61
90	79 68	84 73
95	96 83	96 83
100	100 87	100 87

Contact DeZURIK for Cv/Kv Values on 78-120" (2000-3000mm) valves and for Class 250B.

# Applicable Standards

## DeZURIK AWWA valves are in conformance with the industry standards listed below.

Underwriters Laboratories Inc. Classification in accordance with ANSI/NSF Standard 61 for Drinking Water System Components.

Valves conform to AWWA Standard ANSI/AWWA C-504, Rubber-Seated Butterfly Valves.

This standard includes reference to other applicable standards shown below.

Dimensions and drilling of flanged end connections conform to Class 125 sections of ASME/ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings.

Mechanical-Joint bell dimensions conform to ANSI/AWWA C111/A21.11, Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings.

Bonding of 3" (80mm) through 24" (600mm) seat conforms to ASTM D429, Standard Test Methods for Rubber Property — Adhesion to Rigid Substrates.

Ozone resistance of seat material conforms to ASTM D1149, Standard Test Method for Rubber Deterioration — Surface Ozone Cracking in a Chamber.

Seat material volume increase is less than 2% after immersion in distilled water for 70 hours, when tested in accordance with ASTM D471, Standard Test Method for Rubber Property — Effect of Liquids.

Valves conform to MSS SP-67, Butterfly Valves.

Materials conform to standards as listed in the Materials of Construction.

# Apollo® 70-100 Series

## Bronze Ball Valve

Threaded, 600 psig WOG, Cold Non-Shock. 150 psig Saturated Steam. (See referenced P/T charts)  
Vacuum Service to 29 inches Hg.

Federal Specification: WW-V-35C, Type: II, Composition: BZ, Style: 3.

MSS SP-110; Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved 8 Flared Ends.

### FEATURES

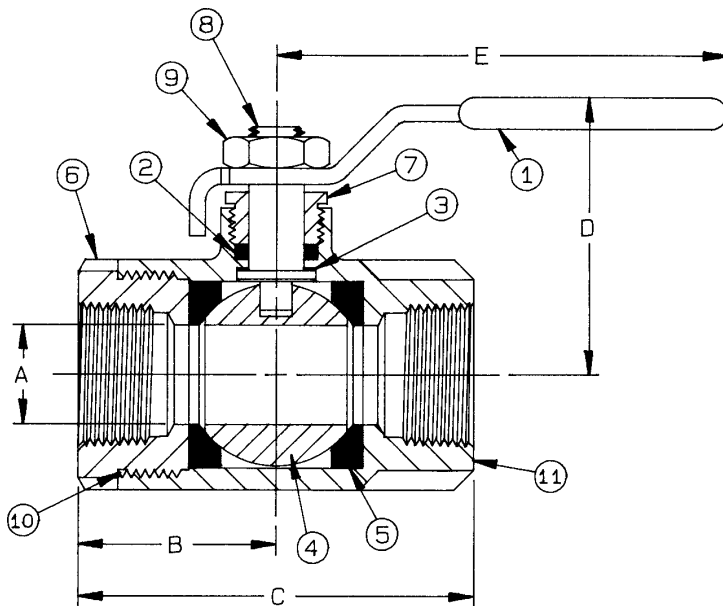
- Chromium plated ball
- RPTFE seats and stuffing box ring
- Blow-out-proof stem design
- Adjustable packing gland

### STANDARD MATERIAL LIST

1. Lever and grip	Steel, zinc plated w/vinyl	7. Gland nut	B16
2. Stem packing	RPTFE	8. Stem	B16
3. Stem bearing	RPTFE	9. Lever nut	Steel, zinc plated
4. Ball	B16, chrome plated	10. Body seal	PTFE
5. Seat (2)	RPTFE	(1-1/4" to 3")	
6. Retainer	B16 (1/4" to 1")	11. Body	B584-C84400
	B584-C84400 (1-1/4" to 3")		

### VARIATIONS AVAILABLE:

70-120 Series	(Adjustable Stop Lever)
70-140 Series	(316 SS Ball & Stem)
70-150 Series	(Balancing Stop)
70-190 Series	(Locked Retainer)



BRONZE BALL VALVE

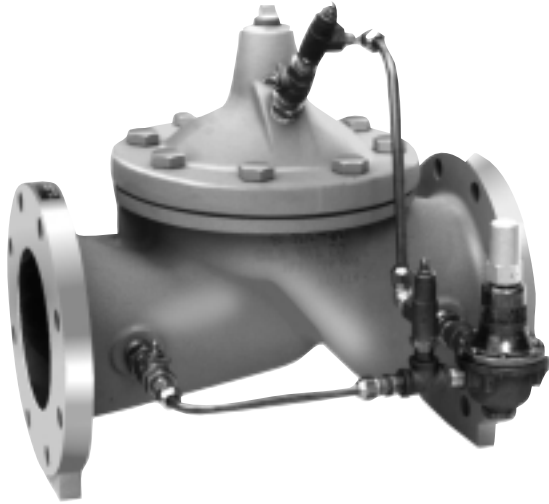
NUMBER	SIZE	A	B	C	D	E	Wt.
70-101-01	1/4"	.37	1.03	2.06	1.75	3.87	.60
70-102-01	3/8"	.37	1.03	2.06	1.75	3.87	.56
70-103-01	1/2"	.50	1.12	2.25	1.75	3.87	.63
70-104-01	3/4"	.68	1.50	3.00	2.12	4.87	1.39
70-105-01	1"	.87	1.68	3.37	2.25	4.87	1.72
70-106-01	1-1/4"	1.00	2.00	4.00	2.62	5.50	3.26
70-107-01	1-1/2"	1.25	2.18	4.37	3.06	8.00	4.61
70-108-01	2"	1.50	2.34	4.68	3.25	8.00	6.06
70-109-01A	2-1/2"	2.00	3.12	6.25	3.72	8.00	17.25
70-100-01	3"	2.50	3.37	6.75	4.12	8.00	18.60
70-10A-01	4"	3.12	3.68	7.37	5.25	10.00	25.50

### OPTIONS AVAILABLE:

(SUFFIX)	OPTION	SIZES
-02-	Stem Grounded	1/4" to 3"
-03-	1-1/4" CS Stem Extension	1/4" to 3"
-04-	2-1/4" CS Stem Extension	1/4" to 3"
-05-	Plain Ball	1/4" to 3"
-07-	Steel Tee Handle	1/4" to 2"
-08-	90° Reversed Stem	1/4" to 3"
-10-	SS Lever & Nut	1/4" to 3"
-14-	Side Vented Ball (Uni-Directional)	1/4" to 3"
-15-	Wheel Handle, Steel	1/4" to 2"
-16-	Chain Lever - Vertical	3/4" to 2"
-17-	Rough Chrome Plated - Bronze Valves	1/4" to 3"
-21-	UHMWPE Trim (Non-PTFE)	1/4" to 3"
-24-	Graphite Packing	1/4" to 3"
-27-	SS Latch-Lock Lever & Nut	1/4" to 3"
-30-	Cam-Lock and Grounded	1/4" to 2"
-32-	SS Tee Handle & Nut	1/4" to 2"
-35-	VTFE Trim	1/4" to 3"
-36-	SS Hi-Rise Round Handle, SS Nut	1/4" to 2"
-39-	SS Hi-Rise Locking Wheel Handle, SS Nut	1/4" to 2"
-40-	Cyl-Loc and Grounded	1/4" to 2"
-41-	Automatic Drain (Bronze Valves Only)	1/4" to 2"
	see page J-8	
-45-	Less Lever & Nut	1/4" to 3"
-46-	Latch Lock Lever - Lock in Closed Position Only	1/4" to 3"
-47-	SS Oval Latch-Lock Handle & Nut	1/4" to 1"
-48-	SS Oval Handle (No Latch) & Nut	1/4" to 2"
-49-	Assembled Dry	1/4" to 3"
-50-	2-1/4" CS Locking Stem Extension	1/4" to 3"
-56-	Multifill Seats & Packing	1/4" to 3"
-57-	Oxygen Cleaned	1/4" to 3"
-58-	Chain Lever - Horizontal	3/4" to 2"
-60-	Static Grounded Ball & Stem	1/4" to 3"
-63-	NPT x Solder/Socket Weld	3/8" to 3"
-64-	250# Steam Trim	1/4" to 3"
-P01-	BSPP (Parallel) Thread Connection	1/4" to 3"
-T01-	BSPT (Tapered) Thread Connection	1/4" to 3"

**For Pressure/Temperature Ratings,  
Refer to Page M-9, Graph No. 4**

# Pressure Reducing Valve



- Sensitive and Accurate Pressure Control
- Easy Adjustment and Maintenance
- Tamper Resistant
- Optional Check Feature
- Fully Supported Frictionless Diaphragm

The Cla-Val Model 90-01/690-01 Pressure Reducing Valve automatically reduces a higher inlet pressure to a steady lower downstream pressure regardless of changing flow rate and/or varying inlet pressure. This valve is an accurate, pilot-operated regulator capable of holding downstream pressure to a pre-determined limit. When downstream pressure exceeds the pressure setting of the control pilot, the main valve and pilot valve close drip tight.

If a check feature is added, and a pressure reversal occurs, the downstream pressure is admitted in the main valve cover chamber closing the valve to prevent return flow.

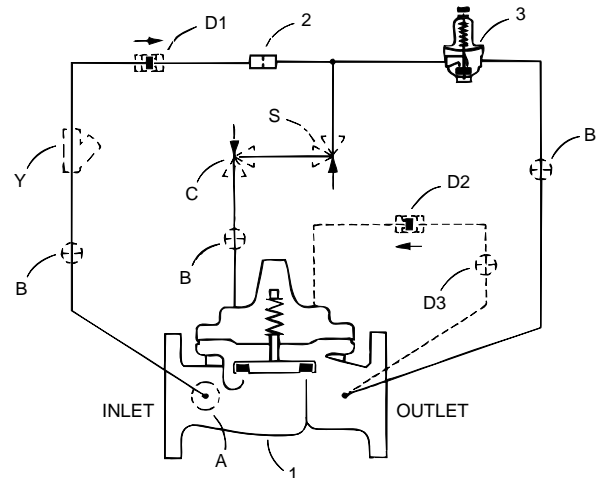
## Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	X58 Restriction Fitting
3	CRD Pressure Reducing Control

## Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 Cock (Isolation Valve)
C	CV Flow Control (Closing)*
D	Check Valves with Cock
S	CV Flow Control (Opening)
Y	X43 "Y" Strainer

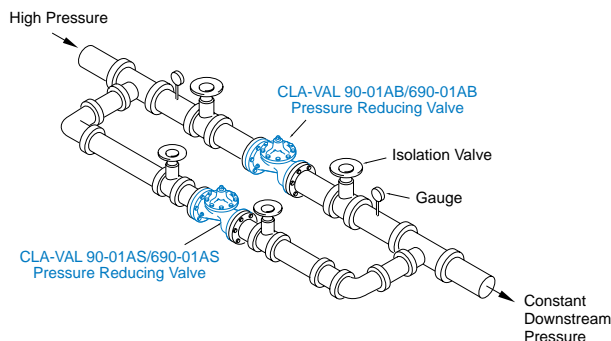
\*The closing speed control (optional) on this valve should always be open at least three (3) turns off its seat.



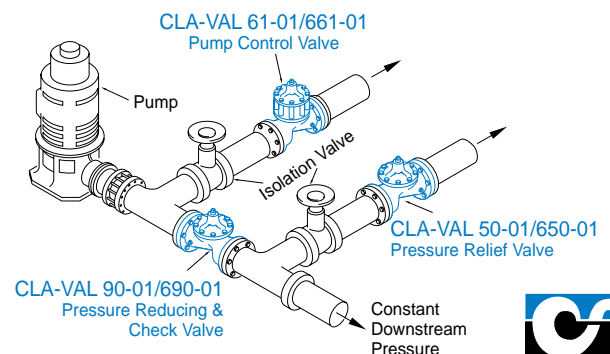
The "D" feature on a vertically installed 6" and larger valve must be horizontally installed.

## Typical Applications

Typical pressure reducing valve station using Model 90-01AB/690-01AB and Model 90-01AS/690-01AS in parallel to handle wide range of flow rates. Larger Model 90-01AB/690-01AB valve takes care of peak loads and smaller Model 90-01AS/690-01AS handles low flows.



The 90-01D/690-01D Combination Pressure Reducing and Check Valve is installed downstream of a pump where a constant system pressure is required. The check feature is to prevent reverse flow through the pump and to hold system pressure when the pump is off.



## Model 90-01 (Uses Basic Valve Model 100-01)

### Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged			Screwed
Grade	Material	ANSI Standards*	150 lb.	300 lb.	End** Details
ASTM A536	Ductile Iron	B16.42	250	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400
ASTM B62	Bronze	B16.24	225	400	400
ASTM A743	Stainless Steel	B16.5	285	400	400
356-T6	Aluminum	B16.1	275	—	—

Note: \*ANSI standards are for flange dimensions only.  
Flanged valves are available faced but not drilled.  
\*\* End Details machined to ANSI B2.1 specifications.

### Materials

Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	1¼" - 16", 24"	1¼" - 16", 24"	1¼" - 16"	1¼" - 16"	1¼" - 16"		
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.			
Disc	Buna-N® Rubber						
Diaphragm	Nylon Reinforced Buna-N® Rubber						
Stem, Nut & Spring	Stainless Steel						



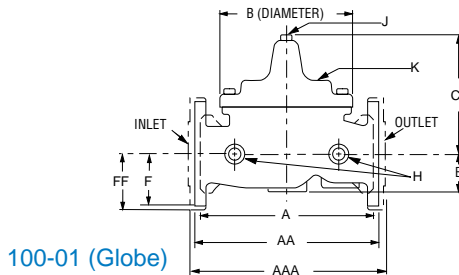
2" Globe, Screwed



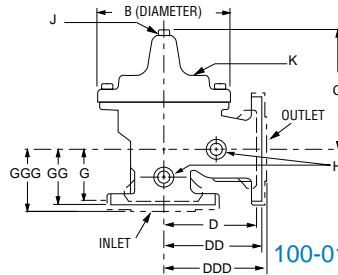
4" Globe, Flanged



4" Angle, Flanged



100-01 (Globe)



100-01 (Angle)

### Model 90-01 Dimensions (In inches)

\*1½" Size Only

Valve Size (Inches)	1¼-1½	2	2 ½	3	4	6	8	10	12	14	16	24
A Screwed	7.25	9.38	11.00	12.50	—	—	—	—	—	—	—	—
AA 150 ANSI	8.50*	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	61.50
AAA 300 ANSI	9.00*	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	63.24
B Dia.	5.62	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	53.16
C Max.	5.50	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	43.93
D Screwed	3.25	4.75	5.50	6.25	—	—	—	—	—	—	—	—
DD 150 ANSI	4.00*	4.75	5.50	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81	—
DDD 300 ANSI	4.25*	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—
E	1.12	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	17.75
F 150 ANSI	2.50	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	19.25
FF 300 ANSI	3.06	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	—
G Screwed	1.88	3.25	4.00	4.50	—	—	—	—	—	—	—	—
GG 150 ANSI	4.00*	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—
GGG 300 ANSI	4.25*	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—
H NPT Body Tapping	¾	¾	½	½	¾	¾	1	1	1	1	1	1
J NPT Cover Center Plug	¼	½	½	½	¾	¾	1	1	1 ¼	1 ½	2	1 ½
K NPT Cover Tapping	¾	¾	½	½	¾	¾	1	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	10-32	10-32	¼-28	¼-28	¾-24	¾-24	¾-24	¾-24	¾-24	½-20	¾-16
Stem Travel	0.4	0.6	0.7	0.8	1.1	1.7	2.3	2.8	3.4	4.0	4.5	6.50
Approx. Ship Wt. Lbs.	15	35	50	70	140	285	500	780	1165	1600	2265	6200

## Model 690-01 (Uses Basic Valve Model 100-20)

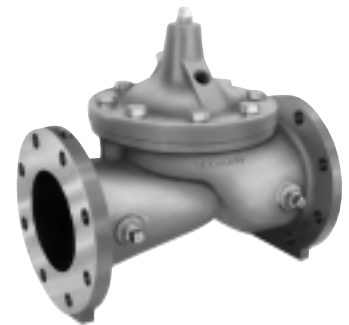
### Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 lb.	300 lb.
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400
ASTM A743	Stainless Steel	B16.5	285	400
356-T6	Aluminum	B16.1	275	—

Note: \*ANSI standards are for flange dimensions only.  
Flanged valves are available faced but not drilled.



3" Globe, Flanged



6" Globe, Flanged

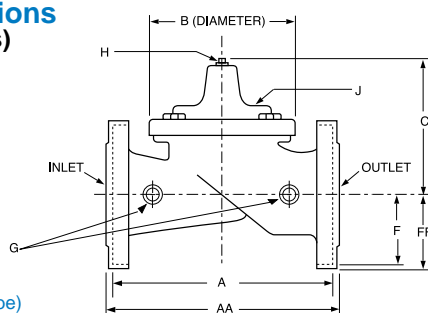


6" Angle, Flanged

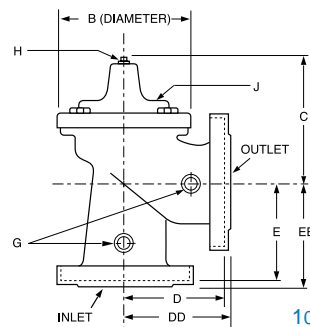
### Materials

Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	3"-30"	3"-30"	3"-16"	3"-16"	3"-16"		
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.			
Disc	Buna-N® Rubber						
Diaphragm	Nylon Reinforced Buna-N® Rubber						
Stem, Nut & Spring	Stainless Steel						

### Dimensions (In inches)



100-20 (Globe)











































100-20 (Angle)

### Model 690-01 Dimensions (In inches)

VALVE SIZE (Inches)	3	4	6	8	10	12	14	16	18	20	24	30
A 150 ANSI	10.25	13.88	17.75	21.38	26.00	30.00	34.25	35.00	42.12	48.00	48.00	63.25
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	—	36.62	43.63	49.62	49.75	—
B DIA.	6.62	9.12	11.50	15.75	20.00	23.62	28.00	28.00	35.44	35.44	35.44	53.19
C MAX.	7.00	8.62	11.62	15.00	17.88	21.00	20.88	25.75	25.00	31.00	31.00	43.94
D 150 ANSI	—	6.94	8.88	10.69	—	—	—	—	—	—	—	—
DD 300 ANSI	—	7.25	9.38	11.19	—	—	—	—	—	—	—	—
E 150 ANSI	—	5.50	6.75	7.25	—	—	—	—	—	—	—	—
EE 300 ANSI	—	5.81	7.25	7.75	—	—	—	—	—	—	—	—
F 150 ANSI	3.75	4.50	5.50	6.75	8.00	9.50	11.00	11.75	15.88	14.56	17.00	19.88
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	—	12.75	15.88	16.06	19.00	—
G NPT Body Tapping	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1	1
H NPT Cover Center Plug	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/4	2	2	2	2
J NPT Cover Tapping	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	1/4-28	1/4-28	3/8-24	3/8-24	3/8-24	3/8-24	3/8-24	1/2-20	1/2-20	1/2-20	3/4-16
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	3.4	4.5	4.5	4.5	6.5
Approx Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	2733	2551	2733	6500

## Valve Selection

These Symbols  and  Indicate Available Sizes

Inches	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30
mm	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750
End Detail	Screwed	Screwed & Flanged				Flanged										
Globe																
Angle																
Max. Continuous	93	125	210	300	460	800	1800	3100	4900	7000	8400	11000			25000	
Max. Intermittent	120	160	260	370	580	990	2250	3900	6150	8720	10540	13700			31300	
Min. Continuous	10	10	15	20	30	50	115	200	300	400	500	650			1750	
Max. Continuous	6	8	13	19	29	50	113	195	309	441	529	693			1575	
Max. Intermittent	7.6	10.1	16.4	23	37	62	142	246	387	549	664	863			1972	
Min. Continuous	.6	.6	.9	1.3	1.9	3.2	7.2	13	19	25	32	41			110	
Globe																
Angle																
Max.Continuous					260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500	28000
Min. Continuous					15	30	50	115	200	300	500	500	900	900	900	1850
Max.Continuous					16	37	65	145	258	403	581	581	1040	1040	1040	1764
Min. Continuous					.9	1.9	3.2	7.2	13	19	32	32	57	57	57	117

\* 690-01 is the reduced internal port size version of the 90-01.

For 100-01 basic valves suggested flow calculations were based on flow through Schedule 40 Pipe. Maximum continuous flow is approx. 20 ft/sec (6.1 meters/sec) & maximum intermittent is approx. 25 ft/sec (7.6 meters/sec) and minimum continuous flow is approx. 1 ft/sec (.3 meters/sec). For 100-20 basic valves suggested flow calculations were based on flow through the valve seat. Approx. 26 ft/sec (7.9 meters/sec) was used for maximum continuous flow & 1 ft/sec (.3 meters/sec) is used for minimum continuous flow. Maximum continuous flow through the valve seat for the 30" 100-20 is approx. 20 ft/sec (6.1 meters/sec).

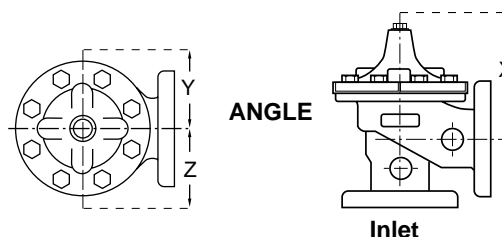
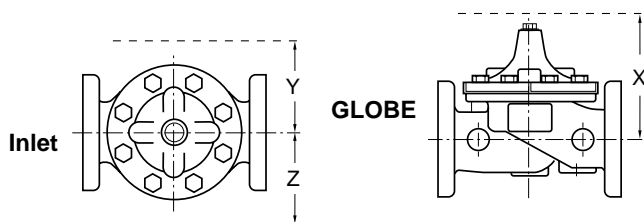
Many factors should be considered in sizing pressure reducing valves including inlet pressure, outlet pressure and flow rates. For sizing questions or cavitation analysis, consult Cla-Val with system details.

\*\*Flanged End Detail Only

## Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

Valve Size	1 1/4" & 1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
X Max.	11.50	12.50	12.75	13.00	13.25	15.75	17.25	20.25	21.75	25.00	27.25	27.25	27.25	50.00	50.00
Y Max.	4.00	4.00	4.50	5.00	6.00	8.00	10.25	12.00	14.25	16.75	18.00	18.00	18.00	30.00	30.00
Z Max.	6.50	6.50	7.00	8.00	9.00	9.50	11.50	12.50	14.50	16.75	18.00	18.00	18.00	30.00	30.00



## Pilot System Specifications

### Adjustment Ranges

2 to 30 psi  
15 to 75 psi  
30 to 300 psi\*

\*Supplied unless otherwise specified

Other ranges available, please consult factory

### Temperature Range

Water: to 180°F

### Materials

#### Standard Pilot System Materials

Pilot Control: Bronze ASTM B62  
Trim: Stainless Steel Type 303  
Rubber: Buna-N® Synthetic Rubber

#### Optional Pilot System Materials

Pilot Systems are available with optional Aluminum, Stainless Steel or Monel materials at extra cost.

Note: Available with remote sensing control.

## When Ordering, Please Specify

1. Catalog No. 90-01 or No. 690-01
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Screwed or Flanged
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed



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